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CACTUS AND SUCCULENT JOURNAL

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Fig. 1. *Cleistocactus* grown under the varietal name of *hyalacanthus* in the garden of R. H. Diehl, Vista, California.

CACTUS AND SUCCULENT JOURNAL

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VOL. XXXIII JANUARY-FEBRUARY, 1961 (Price 75¢) No. 1

CONTENTS

Affiliates of Cactus and Succulent Society of America Inc.		2
High Center, Part II	Ed and Betty Gay	3
Euphorbia x *Lophogona*	Harry Hall	7
Sun-lovers	Mrs. Myrtle Coe	8
Spotlight on Round Robins	Mrs. Glayds Panis	9
Disocactus ramulosus	Myron Kimnach	11
The New York Cactus and Succulent Society	Joseph Emma	16
Wilmattea minutiflora	Clarence K. Horich	17
Revised By-Laws of the Cactus and Succulent Society of America, Inc.		19
Cultivated and Native Agaves in the Southwestern United States	August J. Breitung	22
Euphorbia obesa	L. R. LeRoy	24
Desert Flowers Under Glass	Marjorie E. Shields	25
A New Cactus for New Mexico	Byron F. Murphy	28
Spine Chats	Ladislaus Cutak	31

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BINDING JOURNALS

See page 194 of the November-December Journal, page 194 for information. No copies can be accepted after Feb. 10, 1961.

High Center

By Ed and Betty Gay

PART II

On the afternoon of our eighth day of travel we came out of a narrow box canyon, over a ridge, and suddenly beautiful Los Angeles Bay was spread before us. "Came in over the freeway, I see," said Antero Diaz, as he registered us for a room at the Casa de Diaz. As a general rule his guests arrive in boats or planes rather than by the road. And then—luxury of luxuries, a shower, a shampoo, clean clothes, and three lovely, lazy days in a charming spot among good company. Both the Cinco de Mayo and Eddie's birthday were celebrated here. We heard the author, Ray Cannon, spin some of his marvelous true tales about the gulf, did a little black-light prospecting with a pair of rock hounds, and generally enjoyed the relaxed and pleasant way of life of the Diaz family and their guests. We were amazed, though, to learn that only two or three days before boats had been blown ashore here by seventy-mile winds while our tent was only mildly rustled in the inland valleys where we had camped.

When we left on the morning of the seventh of May to return to the main road, we were convoyed as far as Mission San Borjas by several of our new-found friends in a G.M. power wagon. We have since learned to our disappointment that we passed colonies of Cochemeia setispinus along this road, but failed to see them. Perhaps we were too intrigued by the sight of several abandoned wells or mine shafts along the way, with bubbling sulphur in their depths. Near the mission, in fact, is a hot spring often used for bathing by both local residents and travellers. The mission, built approximately two hundred years ago, is still standing and in use for religious services. The irrigated valley and minor activity in nearby mines support several families at the mission site, but an abandoned tannery, stone tanks, and crumbling buildings are better indications of the community which once prospered here.

Twenty-two miles and twenty-four hours after leaving the mission, we again found ourselves on Highway Number One at Rancho Rosalito. Between here and El Arco we collected a number of new plants, including Ferocacti which we believe were chrysacanthus and vizcainensis, Mammillarias blossfeldiana and hutchinsoniana as well as brandegeei variety gabbii, Lophocereus schottii monstrosus, Echinocereus brandegeei and Opuntia invicta. With their flat gray spines and low clustered growth, there were times when the two last plants were almost indistinguishable at first glance. We began to see quantities of Yucca valida, almost like the California Joshua tree, but did not yet know what a boon this plant would be to us in another day or two.

We had been told that El Arco was a poor, struggling community of about a hundred people, where the chickens had to be squeezed for every egg. The reality lived up to advance notices, particularly since a number of roofs had been blown off by strong winds a couple of nights before. However, everyone was out and stirring about in celebration of Mothers' Day. That is, the men were celebrating with the aid of tequila and beer. The mothers all seemed to be going about their usual chores. One mother provided us with a lunch of tortillas and beans. We also had the pleasure of talking for a little while with the schoolteacher, a young man who comes down from Ensenada for four months each year to conduct classes up to the third grade level. Apparently because of lack of water, there is almost no agriculture here. Most of the men are employed in nearby mines. We started out of town to the west, on the road indicated by a Southern California Automobile Club sign, but luckily were stopped and redirected to the south. Just before reaching San Ignacio we talked to two men who had taken the route to the west. They had been stuck in the sand for two or three days, until a truck happened by and pulled them out.

We had dreaded the road skirting the Vizcaino desert from El Arco to San Ignacio, expecting mile after mile of nothing but sand and searing heat. Actually, there was only one stretch of dangerously soft sand, and to our great relief that had been paved with yucca trunks. The desert itself was the normal sort of desert common in Arizona and California, with plenty of both plant and animal life, and not uncomfortably warm in early May.

Just the same, San Ignacio was a welcome and beautiful oasis. Picture coming through volcanic hills to a deep canyon entirely filled with majestic date palms. Dropping down to the valley floor, we were soon among avenues completely shaded by the palms. Water is plentiful, and little irrigation canals meander through every patio, but the soil is thin and lacking in nourishment, so that not many vegetables can be grown. However, there is a good variety of shade trees and ornamental plants. We found a room in the home of Señora Lerre, arranged to be fed by another lady down the street, and took our car to Mr. Frank Fischer's garage to be checked and serviced. Mr. Fischer, now in his seventies, was a young German sailor when

Fig. 2
Left to right. Top row: Lighthouse at Mulege. Mission at Mulege. Building a dam at Mulage. Center row: Machaerocereus eruca near Pozo Grande. Road bed and freeway. Lemaireocereus thurberi crest 110 miles north of La Paz. Bottom row: Pachycereus pringlei in the Badlands 80 miles northwest of La Paz. Camp 45 miles northwest of La Paz. View of La Paz.

he left his ship and settled in Baja California. The main work of the garage is now done by one of his sons, and Mr. Fischer has leisure to hunt and explore the surrounding country, to enjoy his many grandchildren, and to chat in Spanish, English or German with passing travellers. We were sorry to disappoint him by not having any magazines with us, because he finds it hard to get reading material. In San Ignacio we also met some of the new pioneers whose efforts, we are sure, will one day make a garden of the forbidding Vizcaino desert.

Two days later we pushed on to Santa Rosalia through some of the most beautiful country of our trip, commanded by the majestic peaks of the Tres Virgenes Volcanos. The road was graded, gravelled, and showed evidence of a great deal of work, particularly through the

mountains. Indeed, thanks to the government of the territory of Baja California del Sur, we had no further difficult roads except for a few miles along Bahia de la Concepcion. Of course, only one heavy rainfall would change all that.

Santa Rosalia, established by a French company some years ago as a mining town, has a depressing "company town" appearance, not improved by voluminous smoke from the smelter. Dr. C. S. McKinnon, a long-time local resident, was kind enough to show us something of the town and advise us as to the best routes and most scenic spots farther south. Stepping out on the balcony of the French Hotel the morning after our arrival, we could hardly believe our eyes when we saw a Fiat 600 with a California license parked beside the Ford. It belonged to a young Anaheim couple on their way to Mexico City the hard way, but by dint of pushing, digging, and determination they had arrived at Santa Rosalia. We kept them company to Mulege, went fishing together there, and later were pleased to learn from our customs agent that they had arrived safely in La Paz and shipped out a few days before we got there.

Mulege seemed to us to be nothing less than a tropical paradise, with its date palms, fruit trees, and little farms bordering a deep inlet from the sea. Mr. and Mrs. Salazar of the Club Mulege showed us some of the features of the town, including the beautiful Santa Rosalia Mission and the territorial prison. There were approximately twenty prisoners when we were there, most of whom were working to help repair a leak in the irrigation dam above the town. They are permitted to be at large during the day, but report back to the prison at night, and we understand many of them have their families in Mulege and even operate businesses there. We hired a boat from the club and returned with a good catch of cabrilla after a half day's fishing. Abel, our guide, wasn't too well satisfied, though—he said that if the water hadn't been roughened by the recent storm we should have had a great many more fish of many varieties.

Heading south toward Conception Bay, we wondered with some trepidation how we would manage when we came to what Erle Stanley Gardner called, "The Point of the Shadow of Death" in his Baja California account, "The Land of Shorter Shadows." At various points the single-lane road is carved out of the sheer cliffside a hundred feet or more above the water. There were some bad spots where it was very difficult not to scrape the vulnerable underside of the car on the jagged high center, because it was impossible to move more than a few inches to either side. On more than one occasion, Betty was lying flat on the roadbed to check clearance while Ed negotiated a bad spot. However, we did not find the extremely narrow ledge and sharp turn which Gardner described in such frightening terms. Then—the problems of the road were forgotten as we approached the beautiful site of Rancho El Coyote at the northern end of the bay. The white sand, blue water, dark volcanic cliffs, and scattered palms and "mangle" trees along the shore made an unforgettable picture. The bay seemed alive, with its expanse constantly broken by leaping fish or rippled by a slow-swimming ray or turtle.

A rough climb up the steep, volcanic ledges along the water's edge was rewarded by finding colonies of Cochemeia poselgeri and our first Ferocactus rectispinus. What a beauty, with rapier-like straight central spines up to ten inches long. Later Ed took advantage of one of the low cliffs overhanging the water to do a little angling,and came back in a short time with two beautiful fish. We enjoyed one ourselves and gave the other, with some canned goods, to the family at the ranch. From the grandmother and grandfather, who had founded the ranch some sixteen years before, to little Marta and Samuel, charming youngsters of about five and six, we enjoyed our visit with them all. Fishing, swimming, and the sheer restful beauty of the spot kept us at El Coyote a second day before we faced the last difficult bit of travel. For several miles the road turned inland, following a stream bed several feet deep in smooth, round, dark gray rocks that slipped and slid from under the tires and offered hardly more traction than marbles. However, our tires, in which Ed had lowered the pressure to less than twenty pounds, crawled along without too much difficulty and we were soon overlooking the blue, blue water of the bay again. Through the valley and along the bay we continued to see beautiful large specimens of Ferocactus rectispinus, to us the most exicting barrel of them all.

The following morning we finally had reason to be happy that we had brought along the rolls of chicken wire. When we stopped for water at Rancho Año Nuevo the four attractive daughters of the house took us to see their pets—everything from chipmunks to a hawk that was being trained for hunting, including mountain cardinals of three different colors. May both birds and señoritas be happy with the shiny new cages the chicken wire provided!

We were excited at the prospect of a new Mammillaria find when these new acquaintances told us that the dioica-like mams growing near their doorway had a red flower. A confusing variety of specimens were found that day, with such differences in form and spination that we were sure we must have three of four distinct species. By now, though, we are convinced that these and many others the length of the peninsula are all forms of our ubiquitous and

variable friend, dioica.

The twin villages of San Miguel and San Jose de Comondu, like San Ignacio, were green oases in a canyon of basaltic cliffs reminiscent of Zion National Park. The fields of corn led us to hope that we could buy some fresh vegetables, but nothing was available at the store where we stopped. However, it was pleasant to talk to the owner, who had once lived in Los Angeles but considered Comondu a veritable Shangri-La. Indeed, we found it easy to agree with him on such a pleasant day in this clean, quiet village nestled in a verdant valley.

Before sundown we were on the twenty-four foot graded roadbed that would continue for more than sixty miles. Our pleasure was short-lived, though. A few jolts over the wash-boarded ridges convinced us that the people who were still wearing down trails on each side of the roadbed were wiser than we, and we took to the dirt again. Just before a deep arroyo near Pozo grande we were thrilled to see our first field of Machaerocereus eruca, crawling across the earth like giant caterpillars, with Mammillaria capensis growing among them. We saw only three or four patches altogether of the once common "creeping devil" which is being assiduously grubbed out to permit the use of the land for agriculture. From Santo Domingo to the mountains west of La Paz the road passes through terrain like that in the San Quintin area of the north—flat, sandy soil with one cleared field after another, some cultivated, some apparently abandoned. We concluded that much of this area must be no more than marginal land at best for agricultural purposes and felt that it would have been much better if it had never been cleared. Around El Crucero, inland from Magdalena Bay, conditions looked more promising. A great deal of wheat was being harvested and trucked to market, many types of fruits and vegetables were for sale, and the town itself is simply mushrooming. We heard an interesting report that a Canadian firm was planning to start raising castor beans for the oil, which is used by jet aircraft. Since we had seen castor beans thriving in a wild state in some of the valleys not far away, we expect to hear of the success of this venture on our next trip down the peninsula.

Just beyond El Crucero we were delighted to meet a road-building crew laying pavement. From the standpoint of cactophiles, this area had little to offer, and we were eager to cover the 125 miles to La Paz and begin our trip around the southern end of the peninsula. Once more the snow tires sang as we sped on our way.

After arranging with the customs agent, Sr. Chacon Meza, for the shipment of our car to Mazatlan, we set out to enjoy the attractions of La Paz. The famous beach of El Coromuel was temporarily out of commission, having been chosen as a suicide spot by a number of whales who had swum ashore a few days before. These mass suicides occur every few seasons, we learned, and have never yet been satisfactorily explained. On the way back to La Paz, though, we spent a happy hour on a cactus-studded hillside. There we found our first Bartschella schumannii of the trip, an Echinocereus which we have not yet identified, and Mammillarias with unexpectedly straight central spines.

La Paz is a charming little city curved along the harbor. Among the abundance of trees and plants, we were most attracted by the vivid bougainvillea, the handsome cocoanut palms, and especially the magnificent scarlet-flowered royal poincianas to be seen on almost every street. Also unforgettable was the ivory-flowered plumeria, locally known as cacoloxitl, which bloomed so fragrantly in the patio of our hotel.

The goal of our trip, though, was Cabo San Lucas, more than a hundred miles to the south. As soon as we were on the road again we felt that there had been a sharp transition into a very different sort of country, marked by more agriculture, more population, and much more tropical vegetation. This latter, no doubt by coincidence, seemed to begin just as we passed over the Tropic of Cancer. We particularly enjoyed the gorge of San Bartolo with its picturesque hillside houses and fascinating "salate" trees, whose roots clamber in the open over cliffs and boulders rather than sinking into the soil. The southern end of the peninsula, with easy access to La Paz, also abounds in fishing camps and tourist resorts. We enjoyed a night's stay at one of these, Rancho Buena Vista, where we had the happy surprise of again encountering some of the friends we had made at Bahia de Los Angeles. Travelling by boat and by plane, they had made short work of the distance we had crawled through so laboriously.

The following day was the only really hot one of our trip, but there were new sights at every turn to make us forget the minor annoyances of heat and humidity. We were thrilled to see the fuschia-colored blossoms of Lemaireocereus thurberi variety littoralis and astonished at the largest, pinkest blossom we had ever seen on Machaerocereus gummosus. This and their more slender, tree-like structure made us wonder whether the plants in this area might not be as much a distinct variety of Machaerocereus gummosus as littoralis is of Lemaireocereus thurberi. The town of Miraflores—"Behold the flowers"—we decided was aptly named. Even during this, the dry season of the year, there were a myriad of flowering vines and trees to be seen. Although Pachycereus pringlei persists throughout the peninsula, Pachycereus pecten-aboriginum is much more common south of La Paz.

We enjoyed these graceful plants, with their fine display of bristly golden yellow seed pods. As we neared San Jose del Cabo, though, we saw many of them felled by the violent chubasco of the previous September. Many other trees were blown down and it appeared that much of the northern section of the town had been levelled by the ferocious storm. The largest buildings, such as schools and churches, had either fared the worst or were the last to be rebuilt. From San Jose to Cabo San Lucas we were nearly always within sight and sound of the ocean, and found time to collect sea urchin shells as well as Echinocereus sciurius and Bartschella schumannii.

In the late afternoon came the view we had travelled over 1300 miles to see—the rocky promontories known as the "Three Monks" at the very tip of the peninsula. That night we camped in the mouth of a canyon not too many yards from the thunderous surf of the "Infiernillo" where currents from the Gulf and the Pacific meet in swirling conflict.

Pacific breezes cooled our trip back to La Paz. Bartschellas were everywhere, and we were pleased to find Ferocactus horridus, Mammillaria peninsularis, Mammillaria petrophila, and —we think—Mammillaria phitauiana. We had no luck, though, with Wilcoxia striata or Pereskiopsis porteri. They either were not there or were too well camouflaged for us to see among the dry sticks of other vegetation.

A hail from the roadside stopped us at San Juan de los Lagos. As had happened at so many other isolated ranches on our trip, we were cordially invited to have coffee, and spent a pleasant hour or two admiring the ranch. After seeing their flourishing crops and fruit trees, we were surprised to learn that the owners had moved there only two or three years before. We eagerly hope before too many years to get back to this charming spot and to see more of the appealing towns of El Pescadero and Todos Santos.

Our return to La Paz that night marked the end of the most varied and fascinating trip we have ever made. Nothing remained but to pack and dispatch the plants collected for the University of Mexico, arrange for the shipment of the Ford to Mazatlan, and fly there to meet it. Much as we enjoy Sinaloa and Sonora, it seemed an anticlimax to be able to return in only three days over a greater distance than it had taken a month to traverse on our road South.

But in spite of that rough road—or partly because of it—we now understand the fascination that has drawn so many cactophiles back to the peninsula again and again. Even without getting away from the main route, we discovered at least one new species of cactus every day of the trip—and how magnificent it was in the month of May to see so many of them in the height of their blooming season. Some of the most beautiful desert areas we have ever seen and miles of unspoiled seashore added to our delight. At the same time, these lonely reaches increased our pleasure in the company of the people, new friends, we met along the way. In short—our next trip on "high center" can't come too soon.

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EUPHORBIA X LOPHOGONA

Mr. Franklin D. Crosby's reference to *Euphorbia lophogona X E. splendens* (E. milii) in the Sept.-Oct. Journal interests me very much indeed and the following notes may throw some light on his query as to where the cross was made. There is a liklihood that a similar cross has been made elsewhere.

About 25 years ago a dear old friend of mine, Thomas Sharp, of Wiltshire England, gave me a few seeds of *Euphorbia lophogona*, a Madagascan species. These germinated and eventually produced their small, insignificant whitish flowers on very short peduncles. A few capsules matured, the seeds germinated, all, with one single exception being typical *E. lophogona*. The "stranger" outgrew all its brethren, had stout thorns instead of the soft hairy fringe on the stem angles, leaves larger, softer in texture instead of dark, glossy and leathery, large and showy 'flowers' on long peduncles instead of small, whitish ones on short peduncles. The pollen parent could be none other than *E. splendens (E. milii)* which festooned the rafters above the Euphorbia collection. The industrial smog of Manchester's winters probably caused abnormal defoliation with this, as well as *E. splendens*, for the latter remains evergreen here.

I took photographs about 1938. Early in the war I donated the plant to Edgar Lamb, believing that the better climate of southern England would do it more justice ,coupled with the fact that I could not take it with me around R.A.F. stations! Sometime in 1941 (no records were kept just then), in a fit of boredom, I wrote a short account of this chance hybrid for the Gardeners' Chronicle and submitted a photograph of the single flowering stem. After resuming my former duties in Manchester at the end of the war I obtained a portion of the original plant which, by the way, was the only living succulent I took with me when I emigrated to South Africa in 1947. During the 14 days sea voyage I unwrapped the precious cargo for a few hours daily to prevent undue leaf-fall much to the astonishment of my fellow passengers!

In our mild Cape climate the plant grows very vigorously, the flower colour is much richer than the deep pink when described and is never without flowers. With us it thrives in a rich soil and partial shade.

From it I have gathered fertile seeds but though the offspring are somewhat variable in spinescence, leaf-shape, length of peduncle and 'flower' size none has ever remotely resembled the mother parent, *E. lophogona*. Some of them are approaching the stout-stemmed *E. bislopii (E. milii var. bislopii)* and since these grow near by the possibility of further crossing cannot be ruled out. However, I was interested in Mr. Crosby's mention of "other plants range from pure white to bright scarlet" which suggests to me that the original cross has been producing fertile offspring elsewhere (and why not?) quite feasibly in the United States where the plant has evidently been in cultivation for some time.

HARRY HALL
Kirstenbosch, South Africa

Fig. 3
Top left: Sun-lovers. Right: View from kitchen window. Bottom left: Night-blooming Epiphyllum. Right: Converted aviary.

It has been my secret, and possibly selfish hope for many months that the Journal would include more Cactus articles, so needless to say I was very pleased with the Sept.-Oct. issue, plus the color plate as an extra bonus. I am definitely a cactus fan; other succulents have my respect but not my love, so I cast my vote for many more editions like this in the future!

Let me say an "amen" to the sentiments expressed by Franklin Crosby. I too enjoy the non-technical articles, especially the "Spotlight on Round Robins" for I seem to have a kinship with all these nice people who are experiencing the same troubles and joys as myself. My ambition is to get blossoms, photograph them and revel in their beauty; their botanical family-tree I shall leave for the more technical minded to worry about.

Due to an early spring and mild summer, blooming season this year has been good in Southern California. Many of my plants have bloomed for the first time and all have made good growth. Incidentally, in the past, for the sake of nicer looking specimens, I have been reluctant to remove any "pups" from them, but this year, even though it hurt, I removed most of them, especially from the Echinopsis clan. The growth of the mother plants has been phenomenal and I feel very well repaid for my rash decision. The pups have rooted well, over 200 of them, and many of these I shall use in gay ceramic planters for Christmas. I disagree strenuously with the theory of "specialization." To me this would be a dull procedure. Consequently I have a little of everything in my collection and each year make it a point to add several more genera. This year I believe my most beautiful blossom was Echinocereus fitchii which covered the entire crown of the plant and lasted for three days. My most remarked about plant, although it has never bloomed, is Opuntia acicularis. Its bright green pads and lovely burnt-orange glochids draw comments from all visitors. The night-blooming Epiphyllum which is exactly 6 ft. tall and planted in the ground presented me with 62 beautiful white blossoms over one weekend. Many friends and neighbors dropped in until well after midnight to see this lovely display of beauty.

Because of quite a small yard I have had to utilize all space available. From the pictures you will notice the out-lawed Los Angeles incinerator has been put into service, as well as a vacated bird aviary. If I don't have room for more cacti I manage to make it somehow!

Again, many thanks to the Editor for the Sept.-Oct. edition of the Journal—I liked it!

Mrs. Myrtle Coe
4260 Dalton Ave.
Los Angeles 62, Calif.

SPOTLIGHT ON ROUND ROBINS

New year greetings to you all and may this year bring you much satisfaction and happiness in your Robin associations.

When I was going over the Robin route lists for vacancies I noticed a number of places available for those who collect both cacti and succulents. Besides these there are two former Cactus and Succulent Robins, No. 2 and No. 4, now no longer functioning, which are open to membership. Completely new, and with up to seven members for each there will be ample room for those of you who would like to join either of them. May I say that while the older Robins have been known as "Cactus and Succulent" Robins and the newer ones appear as "Window Sill" Robins, nevertheless there is very little difference between them, except for the names, they mean the same thing.

The Mammillaria Robin No. 2 (for U.S. members only) is seeking additional members and if perchance there should be more than sufficient number to fill the present Robin, (a happy situation), the overflow will be placed in a new group. It would be especially pleasant to hear from all you who grow and admire these small but attractive cacti. I hope you will consider joining this very worthwhile Robin.

I have had a request for a Robin on Cerei, and hope that a group can get together to form a Robin among those who make these a hobby or who have a few plants in their collections. I do not know whether this was meant to be just for Cerei alone or the whole subtribe of Cereanae, but perhaps that may be decided later if this Robin should materialize. In any case, please write to me for any of the above Robins if you are interested. It would help if you could give me a rough idea of the number of plants you have as well as whether you are a member of the C. & C. Society of America.

New members joining our Robins are: Mr. and Mrs. D. W. Diffenderfer, Los Altos, California; Mrs. Wanda Kihlstrom, Utah; Mr. Leo Kroonen, Jr., Corona, California; Mr. Irving G. Reiman, Ann Arbor, Michigan; Mrs. Ruth Robbins, Ohio; Mrs. Joseph Pomerantz, Philadelphia, Pennsylvania; Mrs. D. L. Nesbit, North Island, New Zealand; Mrs. W. C. Rains, Colorado; Miss Nancy Clarke, Tucson, Arizona. I am happy to welcome each one of you.

Because of the favorable comments given to me when I reported on a single Robin a previous time, I thought I might concentrate on another this month. I have chosen the Seed Propagation Robin No. 1, subtitled "Wildcat No. 1" which has as its Director Mr. I. Robert Walton. This Robin has a limited number of five members, each of whom type copies of each round in order that every member shall have a record of all Robin correspondence. This Robin is timely, perhaps, since it will soon be seed planting time. My report, however, is made from a number of rounds of this Robin and is not of a single round. I apologize for having had to shorten the individual letters which would have made interesting reading I am sure but a little, perhaps, is better than none. Members taking part are: Mrs. Doreen Murphy, Edinburgh, Scotland, Miss Agnes T. Hirshinger, New York, N. Y., Mr. J. Robert Walton, Director, Louisiana, Mr. Clark Champie, Texas, and Mr. Ian McKay, British Columbia, Canada.

I will begin with Doreen, who wrote about a year ago of her trials and errors of growing from seed: "It was in 1952 I started to grow cacti and succulents from seed. At first it was more accurate to say that I tried to grow them—my first attempts were pathetic failures." An article she read had suggested the use of a box put over an electric light bulb for heat, and over this a pan of water in which the prepared seed pan was set, then covered with a sheet of glass and another glass for the top of the box and shaded to exclude light. She wrote, "The seed germinated not too badly. The trouble was in the box method. I found the light bulb produced a hot spot; the tray did not spread the heat to any great extent; the humidity provided by the water almost simmered the plants. They grew like jack's beanstalk, turned over like wilting rhubarb stalks and petered out. The next year I tried again, using one of the metal trays in my greenhouse through which was run a soil warmer, the tray being filled with coarse sand, the seed pans plunged in this and the whole tray covered with glass and over that a perforated zinc to difuse the light. The sand was kept evenly moist, and the soil warmer provided even heat. But alas! Failure once more. In preparing the pans I had tried E. Lamb's method, where he suggested in place of crocks that cotton wool be used. I used the wrong material, waste wool, which disintegrated and left a void in the bottom of the pans. After a time they dried out, and the compost collapsed into the bottom. Any seed which germinated did not survive this catastrophe. I decided not to try again but in 1955 I had success beyond my wildest dreams. I used much the same method except in the large tray of sand, which is four inches deep and through which is run the soil warmer, I placed a second tray of sand in which is sunk small pots each containing a species. I use 1¼ inch pots. Succulents need pricking out within a few weeks and often potting on again before autumn. Cacti need to be put into individual pots about August, sunk again into sand in the trays and kept moist and warm for another year. Perhaps I should say that the glass covering to the tray is removed as soon as a reasonable amount of seed has germinated. The perforated zinc is kept in place to keep the seedlings from turning red from too much exposure to sun which retards their growth. I find that seedlings and indeed all my plants start to grow around the end of March and continue until hot weather, when they seem to stand still, for a time, and have another growing period for a month or so around late August/Sept. From the end of October plants over 18 months old, unless very small, or their natural growing season, are kept dry for the winter."

Ian's letter, which is next, wrote, "Agnes: I rather lean to your opinion that spring and early summer is the best for cactus seed planting. I have so far not been able to gain much by out-of-season planting. Perhaps a worthwhile gain *could* be made were I to fuss more with the four factors of temperature, root moisture, humidity and light. I expect to begin planting about March or April, and unless something changes my mind in the meantime, I expect to germinate in vermiculite, and transplant a couple of months later. I anticipate using 2" square plastic flower pots, which I will fit into some sort of low kitchen dish and cover with a sheet of glass. The only use of the dish is a means of bottom-watering, and it will serve to keep the pots together. I, too, have had that green algae forming below soil or vermiculite level in the seed containers but as you say, it seems to do no harm." His letter proceeds, "Clark: Welcome to our group. I can see that with a background such as yours, you will be most eagerly welcomed. Your research work sounds as though it is on a much higher plan than the type of 'experimenting' done by amateurs such as myself. My experimenting is done with the sole end-view of merely getting cacti seed to grow into worthwhile plants. If I could do this with a reasonable degree of certainty of success, I should be happy!"

From Agnes' letter of March 1960 where she wrote to Clark she says, "I have found "straight" vermiculite in a plastic refrigerator box to be my best method and

now stay with it. When spines appear I give a little very dilute commercial balanced liquid fertilizer and again about every month until the plantlets are large enough to transfer to soil. I have no set time for this: whenever they either seem crowded or I have time."

Ole Man (J. Robert Walton) wrote in his letter: "Prepared my seed planting No. 30 on 21 February and got in ten varieties of seed on the 22nd. This may fool me but I do not expect very much from it due to trial of a new method and inability to maintain a reasonable temperature 24 hours daily. The container is "Moist-rite" tray which allows soil mix to be dampened thru a wick-fed arrangement. So far I like this. Even tho I find that pure vermiculite gives me best results I switched mix here also to attempt to copy 'Lamb' as closely as possible since he advocates the wick feed after a fashion. Mix was ½ each potting soil and peat, which was as close as I could come to his recommendation. Seed seemed to be rather slow in the beginning so I added another inovation in the way of a 25 Watt Incandescent light bulb approximately 8 inches away from the seed bed for 15 hours daily. This has helped wonderfully well I think as I see quite a difference in germination rate . . . Plans for '60? I dream a great deal—what outcome remains to be seen. Greenhouse will be completed leisurely and another 6 x 8 wooden building converted into a potting room. It is hoped ere fall to have things in readiness to permit year-round planting of seed. Will plant throughout the spring and summer but—I refuse to move seedlings, as heretofore, under six to twelve months. My big losses have been in moving them in four to eight weeks ere they have put down roots properly."

Clark writes in his letter of March 1960, "Dear Fellow Members: The next several months will be very busy ones for me. I have started moving all my flats of seedlings of last fall into smaller growing greenhouses. And then, section by section, I am going to plant new seed—over 200,000. Perhaps you are wondering how I accomplish this. To start off with, the soil from the desert near here is almost the correct consistency—a little sand added makes it just right—and it is perfect in ph (alkalinity). As the water is also about the correct ph, I have no trouble getting that factor correct or in keeping it that way. And it is a very important factor. Also since the humidity is low I find adjusting the humidity an easy task as it is very easy to increase it but sometimes difficult to reduce it cheaply and easily.

Maybe the most important factor of all is the one of being certain that my seeds are ready for gemination when I plant them. Perhaps you have noticed that while some seeds are ready to germinate when they first come from the fruit, other seeds are still immature and couldn't be sprouted no matter how perfect the conditions surrounding them are. Other seeds require certain processes such as the decaying of the seed coat in order to allow moisture to penetrate; still others must go through a period when they are subjected to near freezing temperatures or even below freezing. Strangely enough, some seeds require a brief exposure to rather high temperatures in order to trigger off that process known as germination.

I think that the most useful thing that anyone attempting to sprout cactus seed could do would be to find out as much about the native habitat of the plants from which the seed came. From this information some sort of mechanism for seed sprouting might be deduced. The first step in sprouting seed, cactus or otherwise, is to make sure the seeds are in the most favorable condition for sprouting as far as you know.

Let me give you an example or two. I have found that Mammillaria heyderi will not sprout when the temperature oscillates from say 80°F to 50°F daily. But seeds from the same batch will sprout in about 4 days if placed in a constant temperature of about 75°F. I deduce (correctly or incorrectly) that the reason for this is that the seeds of this species ripen about Christmas and are ready for sprouting immediately in the correct environment. Therefore they must have some protection from sprouting or they will all sprout prematurely and be frozen by the subfreezing conditions in January and February. I have also noted that during this time of year in Texas where M. heyderi grows that there is a broad span of degrees between the high of the day and the low of the night. This differential continues throughout the spring. It has occurred to me that this is what protects M. heyderi from sprouting too early.

Another (and several species fit this description that I have tested) Echinocereus reichenbachii will sprout quickly and thoroughly under a vacillating temperature that would keep M. heyderi from sprouting. But E. reichenbachii seems to sprout well only after having been chilled for a time. I reason this out as follows: Echinocereus reichenbachii ripens its seeds about July and August. If they were to sprout then the seedlings would be too small to make it through the winter. Hence the protective mechanism of a chill—the chill of winter—to unlock the germination. The seeds would then sprout next spring when the temperature goes up and down, but it seems to have to go up to around 80°F and not below 50°F for several days in a row. That kind of temperature is very unusual until April at least and frosty nights are over by then.

Of course I realize that I have thousands of seeds with which to experiment and can make controlled experiments to prove what factors really count. But you can do some reading up on the native environments of your favorites and perhaps you might come closer to removing that elusive road block to germination that all too many cactus seeds have.

I just noticed Ian's remark about spring and summer being the best time for planting. I have planted at nearly every month of the year and have not been able to tell any difference PROVIDED the seeds have been properly prepared for germination."

This ends just one round of this Robin. Perhaps if you would like more about seed raising, which I had hoped to include but could not for its length, I will make another installment.

(Mrs.) Gladys H. Panis
P. O. Box 705
Falmouth, Massachusetts

REAL TALL TALE

Mrs. Raymond Senesac of Manteno, Ill., has a cactus plant that just doesn't know when to stop. Here it is. She and her husband purchased the cactus, planted in a ceramic cat, in Arizona during their honeymoon 13 years ago. It was 1-inch high then, and now it is 49 inches tall and only ¾ inch around. It is still growing in same "cat" container; she must feed it cat food! UPI Telephoto. Ed. Note: See page 19 *Succulents for the Amateur* for an illustration of a similar ceramic container.

FROM DELAWARE

"How about starting a technical series on taxonomy, classification, morphology and physiology of the cactaceae? Also articles on evolution. All from the scientific point of view?"

Dr. Anson Cooke

We would be pleased to receive articles of this nature. Can you help us? Editor.

ARIZONA HIGHWAY MAGAZINE

Several members have written advising you to obtain the January issue from your magazine dealer. There are many color plates of desert cacti.

Disocactus ramulosus

By MYRON KIMNACH
Botanical Garden, University of California, Berkeley

Cereus ramulosus S.-D., published in 1834, was based on a living plant of unknown origin. According to Vaupel,[1] it was cultivated in 1833 at the Botanical Garden in Berlin, and the holotype, consisting of stems and flowers of the same plant, was still deposited in the Berlin herbarium in 1922. Vaupel considered the species to be a *Rhipsalis,* and although the country of origin of the type was unknown, he believed *R. ramulosa* (S.-D.) Pfeiffer conspecific with two undetermined collections of *Rhipsalis* from Brazil and Peru. The Peruvian collection, by Tafalla in 1790 at Pozuzo, Huanuco, is the earliest known of this species; this specimen, as well as the holotype, were lost in the destruction of the Berlin herbarium during World War II, and, as far as I know, survive only as photographs at the U.S. National Herbarium. Although Vaupel[2] later worked intensively on *Rhipsalis* and was well-qualified to make comparisons of specimens, the country of origin of the type-collection of *R. ramulosa* can never be positively known, so nearly identical is this species to its allies in Central America and the West Indies.

The other members of this alliance are *R. coriacea* Polak., *R. angustissima* Web., *R. jamaicensis* Britt. & Harris, *R. leiophloea* Vaup., and *R. purpusii* Weing. Vaupel and Backeberg recognize all of these and Britton and Rose all but *R. angustissima* and *R. leiophloea.* Following is a table of their main differences, largely based on the type-specimens or original descriptions, but with the parenthesized data being taken from the other living or dried specimens cited at the conclusion of this paper.

	Stems	Flowers
R. ramulosa	linear, ca. 2 (1 to 2.5) cm. wide, obtuse	10 mm. long, rotate, greenish white (or white in *Ule 9650*)
R. coriacea	linear-ovate, 1.5 (1 to 3) cm. wide, acute (rarely obtuse)	(11 to 12 mm. long, rotate-recurved) white (or greenish or pinkish white)
R. angustissima	linear, 5 to 6 (3 to 7) mm. wide, acute	4 to 5 mm. long, hardly expanding(?), reddish white
R. jamaicensis	linear, 1 to 2.5 cm. wide, obtuse	6 mm. long, hardly expanding(?), yellowish green
R. purpusii	linear-ovate, 1 to 3 cm. wide, acute	11 mm. long, (rotate-recurved) greenish white or pinkish white
R. leiophloea	linear-ovate, (2 to) 2.5 cm. wide, subobtuse (or obtuse)	10 mm. long, expansion not known, white

A study of these data shows that the species often nearly or completely intergrade or overlap in their major characters. The stems of the three known collections of *R. ramulosa* have obtuse apices, but so do those of some specimens of the supposedly acute-stemmed *R. coriacea.* The only known collection of *R. leiophloea* has unusually short secondary stem bases, but this character sometimes occurs among some of the other species. The stems of *R. angustissima* are hardly more narrow than those of some collections of *R. coriacea,* a wide-stemmed form of which also grows at Cachí, Costa Rica, the type locality of *R. angustissima.* In the latter species and in *R. jamaicensis* the flowers supposedly do not expand as widely, but, although I have not seen living material of either, I have observed that flowers of *R. coriacea* and *R. purpusii* expand early in the morning and close in the afternoon, and it is likely that those of *R. jamaicensis* and *R. angustissima* were not observed at their full expansion.

In the literature these six species are recorded from Jamaica, Haiti, Mexico, Guatemala, British Honduras, Costa Rica, Peru, Brazil and Bolivia, but among the specimens which I have examined were also those from Honduras, Nicaragua, Colombia and Venezuela; this alliance is therefore known from all the countries of this area except San Salvador, Panama and Ecuador, and it will likely yet be found in the latter two countries, in which exist ideal conditions for epiphytic cacti. Probably few of these species would have been published if they had been restricted to the same country, and it is significant that if all annotations were removed from the herbarium specimens cited below, the country of origin and exact specific identity could be redetermined only for several

1. Zeitschr. Sukkulentenk. 1: 19-20, 1923.
2. Die Kakteen; Berlin, 1925-1926.

collections of *R. angustissima.* The specimens from Guatemala and Honduras, for example, could be determined as either *R. purpusii* or *R. coriacea,* because the differences between these two species are too trivial or perishable to be preserved on a herbarium sheet. Neither have I found any consistent, important differences in plants from Mexico, Costa Rica and Nicaragua being grown at Berkeley. Lacking any sound criteria by which to distinguish these species, I can recognize only *R. ramulosa,* the earliest published, and must assign the others to its synonymy. Such a specific concept contains no greater a morphological range than that found in most species generally upheld in the family.

There remains the difficult problem of the proper genus for *R. ramulosa.* Traditionally it is considered a *Rhipsalis,* for it has leaf-like stems, minute flowers, small, globular fruits and smooth seeds. But in several important characters this species is aberrant in *Rhipsalis*: its stems are similar only to those of *R. houlletiana,* and its pericarpel possesses conspicuous bracteoles, which in *Rhipsalis* are found in only a few species, such as *R. leucorhaphis, R. asperula* and *R. incachana,* that in other respects are quite unlike *R. ramulosa;* finally, the seed is shortly oval, with a lateral hilum and a testa of raised, circular ceils, whereas the seeds of *Rhipsalis* are more narrowly elongated, with a nearly terminal hilum and a testa of flattened, elongated cells.

Considering the wide morphological range in *Rhipsalis,* these differences would be unimportant if it were not for the existence of another genus, *Pseudorhipsalis,* with which *R. ramulosa* compares more closely; this affinity was first emphasized by Vaupel,[2] who included *R. ramulosa, Pseudorhipsalis alata* and *P. himantoclada* in *Rhipsalis* within the same series, *Ramulosae,* characterized by the prescence of floral bracteoles. The stems, fruit and seed of *R. ramulosa* are very similar to those of all species of *Pseudorhipsalis* and its main floral difference from *P. alata* is that its receptacle-tube is prolonged beyond the ovule-chamber for only 1 to 2 mm., rather than 4 to 5.

Pseudorhipsalis is superficially so similar to many species of *Rhipsalis* that some have considered them one genus (as did Vaupel) or at least allied and closely transitional. However, I believe these genera are but distantly related. The least advanced species of *Rhipsalis,* such as *R. asperula (Acanthorhipsalis micrantha), R. (Pfeiffera) ianthothele* and *R. incachana,* have spiny stems and pericarpels and are found in southern Peru, Argentina and Bolivia. The South American genera most resembling them are *Erdisia* and *Corryocactus,* which are known from drier areas of these same countries; even in seed they are similar, most strikingly so in another primitive *Rhipsalis, R. monacantha.* I believe it probable that *Rhipsalis* was derived from ancestors resembling these genera and has since become strongly modified in relation to an epiphytic existence. In another paper I shall present more detailed evidence of this theory of the origin of *Rhipsalis,* which differs greatly from that proposed by Buxbaum[3] or Backeberg.[4]

Pseudorhipsalis, on the other hand, clearly belongs in the *Nopalxochia-Disocactus* alliance, which originated in Mexico. This affinity can be demonstrated by arranging the species of this group in a morphological progression, beginning with *Nopalxochia conzattiana,* the least advanced, and with *Chiapasia, Disocactus, Bonifazia* and *Wittia* representing further steps in reduction. *Pseudorhipsalis macrantha* is extremely similar to *Disocactus biformis* in its flowers, fruits, seeds and proliferous stem-areoles. In turn, the other species of *Pseudorhipsalis,* as well as *R. ramulosa,* differ from *P. macrantha* only in their smaller flowers, shorter receptacle-tube and lack of proliferous areoles. The similarity of *Pseudorhipsalis* to *Rhipsalis* is so close that, providing my theory of their widely separate origin is correct, they must surely comprise the most striking example of convergence in the *Cactaceae.*

The characters contained in the species from *Nopalxochia* to *Pseudorhipsalis* are too diverse to form one easily defined genus. In attempting to divide the group generically perianth-characters can hardly be used, for their main differences in the two extremes, *N. conzattiana* and *R. ramulosa,* are merely in size and color. The tubular, unexpanded perianth of such species as *D. eichlamii* and *D. quezaltecus* is also a weak character because in *D. biformis* the perianth is half-expanded. However, there is one character which divides all these species into two distinct groups—the external appearance of the receptacle. Species of *Nopalxochia* (in which I include *Lobeira* and *Pseudonopalxochia*) have thick, prominently ridged receptacles with large, expanded bracteoles; the fruit is therefore also large, ridged, and with conspicuous bracteoles. On the other hand, the remaining species, including the least advanced, *Disocactus (Chiapasia) nelsonii,* and the most reduced, *R. ramulosa,* have flowers with narrow, unridged receptacles, small appressed bracteoles and smooth, minute fruits. These are characters which would clearly define an enlarged concept of *Disocactus.* Although the flowers of

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3. Kakteen und andere Sukkulenten 4: 6, 1953.

4. Cactaceae, Jahrb. Deutsch. Kakt.-Ges. 1942, part 2: 48-49, 1942.

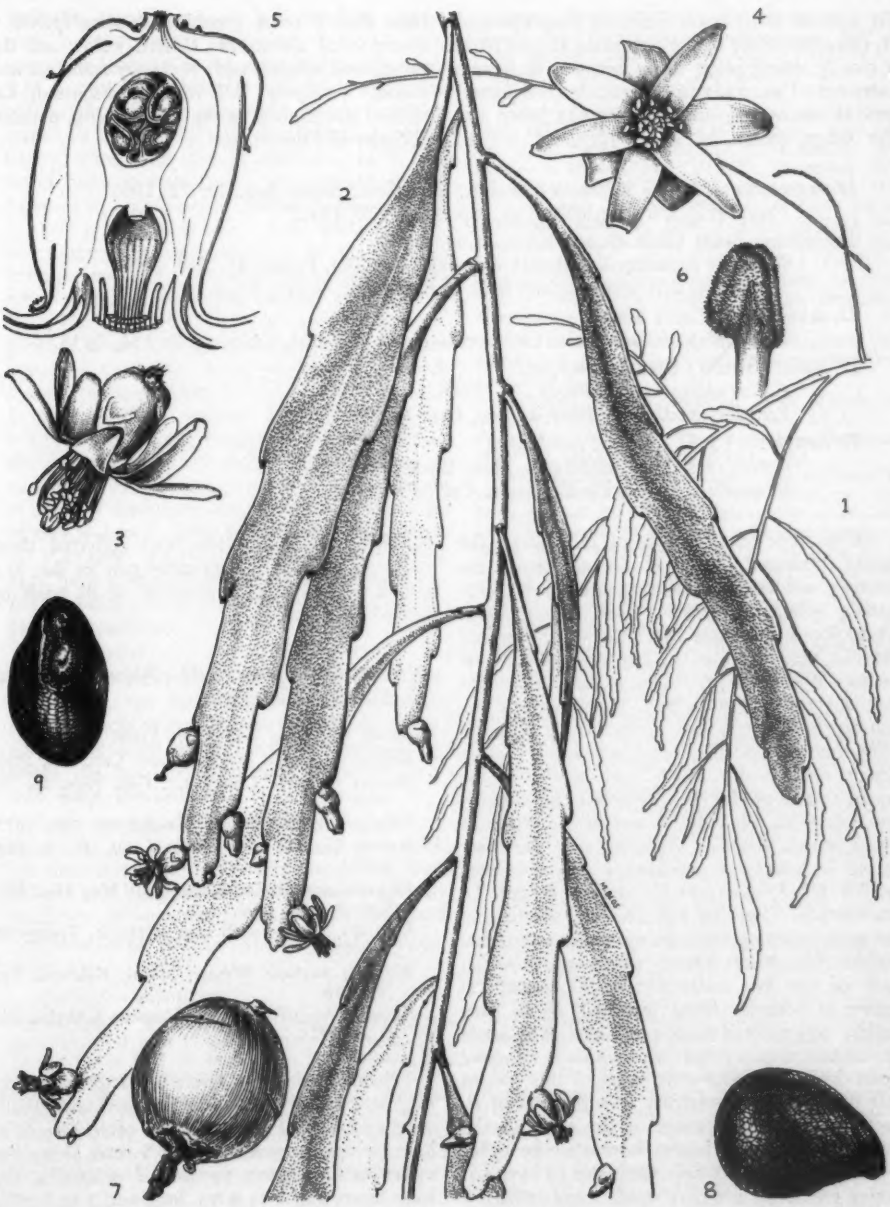


Fig. 4

Disocactus ramulosus (S.-D.) Kimn., U.C.B.G. 56.1118, MacDougall A230 (Chiapas, Mexico). 1. Habit of stems, x 0.16. 2. Stems with buds, flowers and immature fruits, x 1. 3. Flower, side-view, x 3. 4. Flower, apical view, x 3. 5. Receptacle cross-section, x 7.5. 6. Stigma, x 15. 7. Fruit, x 3. 8, 9. Seed, x 20. Drawing by Mrs. M. Bloss, 1960.

D. nelsonii seem vastly different from those of *R. ramulosa,* those of the remaining species form a closely intergrading series between these two extremes. The similarities between *D. biformis* and *P. macrantha,* and between the latter and the other species of *Pseudorhipsalis,* are so close that I must consider *Pseudorhipsalis* a synonym of *Disocactus.* Listed below are the recognized species, with necessary transfers and partial synonymy. All will be discussed, described and figured in my forthcoming, detailed revision of *Disocactus.*

D. macranthus (Alex.) Kimn. & Hutchis., Cact. Succ. Journ. Am. 29: 78, 1957.
Pseudorhipsalis macrantha Alex., op. cit. 14: 20, 1942.

D. himantocladus (Roll.-Goss.) Kimn., *comb. nov.*
Rhipsalis himantoclada Roll.-Goss., Bull. Soc. Bot. France 55: 694, 1908.
Pseudorhipsalis himantoclada Britt. & Rose, Cact. 4:213, 1923.

D. acuminatus (Cuf.) Kimn., *comb. nov.*
Pseudorhipsalis acuminata Cufodontis, Arch. Bot. Sist. Fitogeog. 9: 196, 1933.

D. alatus (Swartz) Kimn., *comb. nov.*
Cactus alatus Swartz, Prodr., 77, 1788.
Pseudorhipsalis alata Britt. & Rose, Cact. 4: 213, 1923.

D. ramulosus (S.-D.) Kimn., *comb. nov.*
Cereus ramulosus Salm-Dyck, Hort. Dyck. 340, 1834.
Rhipsalis ramulosa Pfeiff., Enum. Cact. 130, 1837.

As in some other species of *Disocactus,* the young, flattened stems of *D. ramulosus* are strongly reddened, a coloring presumably protecting immature growth from strong light. These young stems are also remarkably thin and flexible, more so than in any other species of cactus. Within a year they become succulent and later up to 2 mm. thick. The flowering season in Berkeley occurs from March through May, but it probably varies within its range, which extends far north and south of the equator. Except for the reported, rare occurrence of more than one flower at an areole in the segregate *Rhipsalis angustissima,*[5] the flowers of *D. ramulosus* are always single, as they are in all *Pseudorhipsalis* species except *D. macranthus.* They last but one day, opening in the early morning and closing in the afternoon. Unlike the other species of *Pseudorhipsalis,* each of the five collections of *D. ramulosus* grown at Berkeley freely sets fruit by its own pollen, especially if hand-pollinated. The seeds are contained in a sweet juice which is adhesive upon drying, and the wide range of this species may be due, as it apparently is in the case of *R. cassytha,* to the adherance of the seeds to the feet of fruit-eating birds; however, the other species of *Pseudorhipsalis* seem also to have adhesive seeds, yet are of a much more restricted range. Perhaps the more profuse setting of fruit in *D. ramulosus,* or its possibly greater attraction to birds as food, may have been factors in its wider dispersal. It is known from five countries of South America, where the environment is so favorable that one would expect it to be common; actually it has been collected there only seven times, and its rarity may be due to a slower or more recent dispersal of its seeds by birds in that region.

5. Roland-Gosselin in Bull. Mus. Hist. Nat. Paris 17: 470, 1911.

Disocactus ramulosus (S.-D.) Kimn., Cact. Succ. Journ. Am. 33:14, 1961.

Cereus ramulosus S.-D., Hort. Dyck. 340, 1834.
Rhipsalis ramulosa Pfeiffer, Enum. Cact. 130, 1837.
Hariota ramulosa Lem., Cact. Gen. Nov. Sp. 75, 1839.
Rhipsalis coriacea Polak., Linnaea 41: 562, 1877.
Hariota coriacea Kuntze, Rev. Gen. Pl. 1: 262, 1891.
Rhipsalis angustissima Weber, Bull. Mus. Hist. Nat. Paris 8: 465, 1902.
Rhipsalis jamaicensis Britton & Harris, Torreya 9: 159, 1909.
Rhipsalis purpusii Weing., Monat. Kakteenk. 28: 78, 1918.
Rhipsalis leiopbloea Vaupel, Zeitschr. Sukkulentenk. 1: 20, 1923.

Primary *stems* with terete bases up to 70 cm. long and 2 to 5 mm. wide, flattened and broadened apically for 10 to 20 cm., often hirsute at base; secondary stems in 4 or 5 rows along the upper half of terete portion of primaries, the bases terete and 1 to 8 cm. long and 1 to 3 mm. wide, flattened apically for up to 15 cm., often further branched; flattened portions of all stems thin or up to 2 mm. thick when old, lanceolate, or often linear, acute to obtuse, ca. 1.5 cm. (5 to 40 mm.) wide, at first reddish, later green, crenate or often obtusely serrate, the lobes projecting 1 to 5 mm., the areoles ca. 1.5 (1 to 2.5) cm. apart, without bristles on mature growth.

Flowers single at an areole or very rarely

multiple, usually more or less pendent, salverform or with tepals recurving, 7 to 12 mm. long, the limb 10 to 14 mm. wide; *receptacle* 4 to 5 mm. long, 2.5 to 4 mm. wide along the pericarpel, slightly narrowed above, pinkish brown or brownish green, the podaria absent to barely discernible, the bracteoles 6 to 9, the lower ones appressed, the upper often slightly expanding, widely ovate, obtuse to subacute, up to ca. 1.5 mm. long and 2 mm. wide, reddish, not subtending hairs; *tepals* 8 or 9, rotate to strongly recurved (or rarely ascending?), the apices slightly upcurving, obtuse, 3 to 6 mm. long, the outer ones oblong, ca. 2 mm. wide, pinkish green, the inner linear-lanceolate, subobtuse, 1 to 2 mm. wide, pinkish or greenish cream; ovule-chamber ca. 1.25 mm. long and 1 mm. wide, the funicles single, the *nectaries* 0.3 to 0.5 mm. long, hardly protuberant, cream, the *stamens* 12 to 30, further adnate to receptacle for 0.75 to 1 mm., inserted in a single zone at apex of receptacle, exserted 2 to 5 mm., the filaments 2 to 6 mm. long, cream, the anthers ca. 0.25 mm. long, yellowish, the *style* 5 to 8 mm. long, less than 0.25 mm. thick, cream, the stigma-lobes 3 or 4, 0.33 to 1 mm. long, not expanding, papillose, cream.

Fruits ovoid, 4 to 8 mm. long and wide, the epidermis rather dull, white to pinkish white, translucent, the podaria absent, the bracteoles ca. 10, widely ovate, appressed, pink, the margin white, the pulp watery, whitish, tasteless but sweet, the dried floral remains persistent, ca. 5 mm. long, blackish.

Seeds ovate to slightly reniform, 1.25 to 1.50 mm. long, ca. 1 mm. wide, ca. 0.75 mm. thick, the testa shiny, minutely verrucose-pitted, black to brownish black, often slightly keeled dorsally, the hilum oblique, nearly straight, not depressed.

Chromosome number: 2n=22 in MacDougall A230.[6]

Specimens examined:[7]

JAMAICA. Westmoreland: 1849, *Wullschlaegel 846* (MO); 1 mile N. of Hopeton, 1200′ alt., 1956, *Proctor 11714* (IJ). St. James: near Montpellier, 1908, *E. G. Britton 2863* (NY, US). St. Elizabeth: near Ipswich, 200-300 m. alt., 1920, *Maxon & Killip 1509* (NY, US). Trelawny: Troy, 2200′ alt., 1904, *Harris 3864* (UCWI); 1906, *N. L. Britton 511* (NY—holotype of *Rhipsalis jamaicensis*); 1550 ′ alt., 1955, *Proctor 9960* (IJ); near Troy, 1000′ alt., 1903, *Harris & Britton 8562* (UCWI); 600-660 m. alt., 1904, *Maxon 2813* (NY, US); Windsor estate, 400′ alt., 1956, *Proctor 15603* (IJ). St. Ann: 1.5 mile N.E. of Pedro Post Office, 1953, *Howard & Proctor 13644* (IJ); near Golden Grove, 1500′ alt., 1955, *Howard & Proctor 14200* (IJ); Crescent Park, 1954, *Proctor 8617* (IJ); along way to Hollymount, 2000-2500′ alt., 1958, *Yuncker 18260* (UCWI); Ramble, 1898, *Fawcett & Harris 7354* (UCWI). Clarendon: Peckham Woods, 2500′ alt., 1953, *Proctor 8233* (IJ); 1954, *Webster & Proctor 5645* (IJ); Knox College, Spaldings, 2800′ alt., 1949, *Dignum 67* (IJ). Portland: spur of John Crow Mtns. opposite Mill Bank, 450-625 m. alt., 1926, *Maxon 9314* (NY). St. Thomas: Bath to Cuna Cuna Gap, 400 m. alt., 1908, *Britton 3502* (NY); Claverty Cottage, Blue Mtns., *Hart 1352* (UCWI).

HAITI. Hills south of Etang Miragoâne, 1926, *Ekman s.n.* (IJ, US); Acquin, 500 m. alt., *Ekman 7188* (NY).

MEXICO. Tabasco: Balancán, 1939, *Matuda 3369* (F, K, NY). Chiapas: Finca Menno, 1920, *C. A. Purpus s.n.* (NY, US); Finca El Suspiro, Berriozabal, 3000′ alt., *MacDougall A230* (UC, US).

GUATEMALA. Alta Verapaz: S.E. of Finca Yalpemech near Petén boundary, 100-150 m. alt., 1942, *Steyermark 45189* (F); Cubilquitz, 350 m. alt., 1901, *von Tuerckheim 7876* (K, US). Huehuetenango: between Finca San Rafael and Finca Providencia, 800 m., 1942 *Steyermark 49551* (F, US). San Marcos: Volcán Tajumulco, near Finca El Porvenir, 1000-1300 m. alt., 1940, *Steyermark 37379* (F); 1300-1500 m. alt., 1940, *Steyermark 37077* (F). Sololá: near Patalul, 1906, *Kellerman 5697* (US). Suchitepequez: Mazatenango, 380 m. alt., 1928, *Ruano s.n.* (F). Escuintla: near Pantaleon, 1896, *C. & E. Seler 2309* (NY, US).

BRITISH HONDURAS: El Cayo: Valentin, 1936, *Lundell 6316* (F, NY). Stann Creek: Middlesex, 1939, *Gentle 2790* (NY); 200′ alt., 1929, *Schipp s.n.* (F).

HONDURAS. Atlántida: foothills back of La Ceiba, 500′ alt., 1938, *Yuncker, Koepper & Wagner 8020* (F, K, MO, NY, US); slopes of Mt. Cangrejal, 500′ alt., 1938, *Yuncker, Koepper & Wagner 8835* (F, K, MO, NY, US). Comayagua: along Lake Yojoa near Pito Solo, 630 m. alt., 1951, *Williams & Molina R. 17744* (US); 500 m. alt., 1945, *J. V. Rodriguez 2893* (F).

NICARAGUA. Chontales: 1867, *Seeman 48* (K, MO); between Acoyapa and San Miguelito, 1960, *A. Heller 2377* (UC, US).

COSTA RICA. Guanacaste: El Arenal, 600 m. alt., 1923, *Valerio 19* (US); 485-600 m. alt., 1926, *Standley & Valerio 45330* (US). Alajuela: San Pedro de San Ramon, 1400-1500 m. alt., 1913, *Tonduz 17852* (US); Río de los Negritos on the road from Aguas Zarcas to Río Cuarto, 700 m., 1957, *Horich s.n.* (UC, US). San José: San José, 1857, *Hoffman 498* (MO—lectotype of *Rhipsalis leiophloea*;[8] F, NY, US—photographs of holotype at Berlin); 1936, *Calvo 563* (F); Río Maria Aguilar near San José, *Alfaro* 36020 (US); Río Tirribí near San José, 1924, *Alfaro 33978* (US); *Alfaro 33990* (US); Río Tibás, San Juan, north of San José, 1200 m. alt., 1913, *Jimenez 820* (US); Río Hondo, 50 m. alt., 1903, *Pittier 16651* (US); 100 m. alt., *Pittier 16931* (US). Cartago: Cartago, 1875, *Polakowsky 156* (NY, US—photographs of holotype of *Rhipsalis coriacea*); *Brade s.n.* (NY); 1905, *Werckle s.n.* (US); Dulce Nombre, 1400 m. alt., 1924, *Standley 35959* (US);

6. Counted by Mildred Thompson of the U.C. Botanical Garden, Berkeley.

7. Herbaria are indicated by the following standard abbreviations: F, Field Museum, Chicago; IJ, Institute of Jamaica; K, Kew; MO, Missouri Botanical Garden; NY, New York Botanical Garden; P, Paris; UC, University of California, Berkeley; UCWI, University College of the West Indies, Jamaica; US, National Herbarium, Washington. The author wishes to thank the Directors of these institutions for the loan of specimens.

8. As the holotype of *R. leiophloea* at Berlin was destroyed in World War II, the only known surviving type-material is hereby designated as the lectotype.

La Gloria, along Río Reventazon, 800 m. alt., 1940, *León 169* (F); Tapanti, 1200 m. alt., 1936, *Valerio 1435* (F); Turrialba, 1897, *Pittier 2322* (P); 1903, *Collins 5605* (US—photograph); 600 m. alt., 1906, *Maxon 147* (NY); *Maxon 174* (NY); Río Turrialba, 500 m. alt., 1894, *J. D. Smith 4948* (US); 1896, *J. D. Smith 6531* (US); lower Río Turrialba, 2000′ alt., 1928, *Stork 2468* (F); valley of Tuís, 650 m. alt., 1897, *Pittier 2321* (US); Río Birris canyon near Santiago del Paraiso, 1100 m. alt., 1959, *Horich s.n.* (UC, US); Finca Las Concavas, near Cartago, 1200-1300 m. alt., 1925, *Standley 41529* (US); Las Vueltas, Tucurrique, 635 m. alt., 1899, *Tonduz 12999* (P, US); Finca Navarro, 1350 m. alt., 1906, *Maxon 693* (NY, US); 1100 m. alt., 1894, *J. D. Smith 4947* (K, US); La Flor, 2 km. W. of Cachí, 1000 m. alt., 1957, *Horich s.n.* (UC, US); Río Reventazon, 1000 m. alt., 1902, *Wercklé 16608* (US); *Brade s.n.* (NY) (the last two specimens are referable to the segregate *R. angustissima*); Cachí, 1000 m. alt., 1902, *Biolley s.n.* (P—holotype of *R. angustissima*).

COLOMBIA. Meta: Sierra de la Macarena, Río Guapaya, 450 m. alt., 1949, *Philipson, Idrobo & Fernandez 1692* (US). Cauca: near Cartago, 1876, *E. André 2404* (P).

VENEZUELA. Anzoátegui: N.E. of Bergantín, along Río Leon, 500 m. alt., *Steyermark 61470* (NY).

PERU. Huanuco: Pozuzo, 1790, *Tafalla s.n.* (US—photograph).

BRAZIL. Acre: Seringal Sao Francisco, Rio Acre, 1911, *Ule 9650* (K).

BOLIVIA. Isapuri, 1550′ alt., 1901, *Williams 734* (US). La Paz: near cataracts of Río Bopi, 2500′ alt., 1921, *Rusby 749* (US).

COUNTRY UNKNOWN. Before 1834, collector unknown (US—photograph of the holotype of *Cereus ramulosus* at Berlin).

THE NEW YORK CACTUS AND SUCCULENT SOCIETY

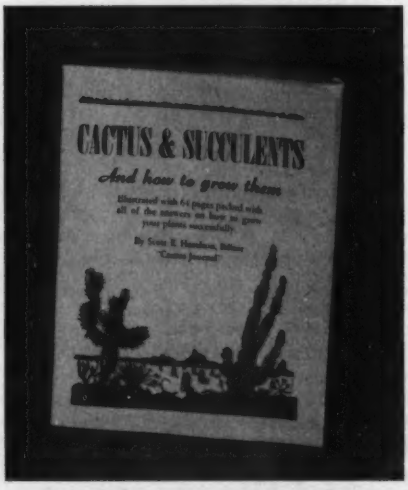
Well, we have come to the end of another year—the first year of our succulent sixties—and a mighty good year it was. Our membership hit a peak of 66 and the average attendance at our meetings runs well over 50 which indicates that we have an active and deeply interested group. In the early days of our existence we attracted a number of members who were drawn to us by the novelty of it or else were more concerned with the social advantages of membership. To a great extent these have been replaced by members whose interest in plants is genuine and who are not afraid to work for the betterment of our society. We have found that careful program planning is the best way to attract new members, and, more important, hold them. We have gotten away completely from the slide show as a complete program entity and now use color slides only as an adjunct to a program rather than as a program in itself. This year, in addition to talks on various plant genera, we have had several programs of more than usual interest such as, "The History of Succulent Plants in Medicine," "Growing Succulents Under Fluorescent Light," and "Winter Hardy Cacti & Succulents in Your Garden." This last program already has many of our members digging up their front lawns and we fully expect to see quite a number of winter hardy succulent gardens in the New York area in the near future.

Our exhibits in the Internation Flower Show claim a lot of our time and entail long hours of hard work, but the results justify the effort. Our Desert Garden at the 1960 show gained us a lot of good publicity and brought us many new members. We are now in the final phases of plans for the 1961 show in which we will show another Desert Garden which we fully expect will surpass the previous one. Visitors to New York in March, 1961 should not fail to see this fine show at the Coliseum which will run from March 4th to 12th.

Although we are a hard working society we still manage to find time for fun and relaxation. Our annual summer picnics have become traditional by now and this year, as usual, Dr. Jerry Barad led off the season and those of us who were brave enough to defy the hurricane that was sweeping the area on the morning of the picnic, arrived at the Barad Farm and Botanical Garden (and Zoo) to find the sun breaking through the clouds. Then followed a perfectly beautiful day made to order for us by our hosts, Bea and Jerry Barad. The hilarious high spots of the day were the potato and peanut races—with cacti substituted for the spuds and nuts. Doc Barad was waiting at the finish line with his first-aid kit and tweezers! The day ended with a free plant distribution. The August picnic at Alma and Walt Mansell's was marked by a perfect summer day and a record turn-out. Members who have been to a Mansell picnic always return for the next picnic just to get more of Alma's famous baked beans . . . the pot gets larger and larger every year!

Our last meeting of the year was held on December 11th at which time our Secretary-Treasurer, Mildred H. Barad, read her semi-annual report which showed us to be in good shape. The report of the Library Committee revealed that the library is now functioning smoothly and the librarian was authorized to double the number of volumes available for lending to our members. The meeting concluded with the election of officers for the coming year with the following results: Pres., Joseph Emma; Vice-Pres., Richard Hunt; Sec.-Treas., Mildred H. Barad. Board of Directors: Dr. Gerald S. Barad, Isidore Greenberg, Walter Mansell and Joseph Vilcheck.

JOSEPH EMMA
Affiliate Reporter



LAST CHANCE TO OBTAIN BOOKLET

We are reprinting Cacti and Succulents and How to Grow Them—Haselton, and any dealer wanting quantity lots should advise by air-mail. Special wholesale prices in thousand lots.

Fig. 5. (Left) *Wilmattea minutiflora* growing in the top of a gigantic tree near Quirigua, Guatemala. (Right) *W. minutiflora* in the jungle same locality. Photos by author.

Wilmattea minutiflora

By CLARENCE K. HORICH

When I arrived in Guatemala I had only a very scanty description of *Wilmattea minutiflora,* a rare epiphytic cactus which I was supposed to collect for the University of California in Berkeley. It had first been collected by Peters in 1907 in Lake Izabál, and at Quiriguá by Mrs. Cockerell in 1912 and by Paul Standley in 1922. Knowing only that this species had triangular stems and small, red flowers, I departed on March 18, 1957, by train to Quiriguá in the Atlantic lowlands of the department of Izabál.

The trip along this ancient and winding railway lasts about ten hours and from Guatemala City extends through hot, dry savannas that become real deserts as soon as one leaves the steep canyons of the Río Guastatoya and enters the wide valley of the Río Motagua in the department of El Progreso. Here, close to El Rancho, the vegetation was dominated by tall "organpipe" cacti, which also frequent similar arid wastelands north and east in the departments of Baja Verapáz and Zacapa. With the exception of the areas bordering the Río Motagua, these arid regions lack human settlements and are but poorly explored, rugged wildernesses. Such desolate, deserted ranges are the Sierra de las Minas, a steep mountain belt bordering the Motagua valley to the north, and the Montaña del Grito and the Sierra de Omóa near the Honduran border —home of such desert cacti as *Nyctocereus guatemalensis* and *Melocactus ruestii.*

Unlike the countries of Nicaragua, the Atlantic coast of Guatemala, neighboring Belize (British Honduras), and Honduras is little benefited by the moist clouds coming from the Caribbean, and the forest vegetation therefore hardly passes the boundary of Zacapa towards the west, where it has gained a precarious foothold in the vicinity of Gualán. Farther toward the Atlantic coast, however, it becomes progressively denser and, a short distance east of the tiny whistle-stop of Iguana, it becomes quite luxuriant. At the same time the desert-xerophytes vanish completely; at Iguana (alt. 493 feet), for example, *Deamia testudo* takes the place of *Hylocereus guatemalensis,* which had been frequent until now.

Quiriguá is a small settlement of the United Fruit Company, employees of which had been the previous collectors of *Wilmattea.* The town, which has lost much of its former importance due to a devastating banana disease, lies at an altitude of only 240 feet above sea-level and is certainly one of the hottest, stickiest spots in Guatemala. This fact, far from stopping me in my search for *Wilmattea,* made me commence at once, for I wished to spend no more time in this veritable "frying pan" than absolutely necessary. Of course, the question as to where I was to find it remained quite quite open. Counting on the curiosity of nearly all foreigners, who are sure to visit the famous

Mayan ruins in Quiriguá, I supposed that *Wilmattea* had first been found some 2 km. N.E. of the town during archaeological explorations, particularly since this district is surrounded by a protected jungle area, whereas most of the primeval forests in the immediate vicinity of Quiriguá and Quiriguá Vieja have long since been sacrificed to the banana plantations.

It was a disagreeable stretch, but I had no difficulties until I reached the ruins. Here I found much *Deamia testudo* growing on trees with *Philodendron* and, above the main temple-terraces, a slender, triangular-stemmed, epiphytic cactus so closely resembling the Pacific coast *Werckleocereus glaber* that I assumed it to be a related species. A rather annoying surprise in the rock litter of the temple was an infuriated Lancehead Viper (*Bothrops atrox*) and, seen soon after, a whole gang of gorgeous blue and red, rear-fanged adders, which I regretfully left behind because I was not collecting reptiles on this trip. Believing I had missed seeing *Wilmattea,* I returned to Quiriguá rather depressed, and on a later trip to Quiriguá Vieja I only found the same two species I had seen in the Mayan ruins. Finally, close to sundown, I thought it best to take along a few of the plants which so resembled *Werckleocereus glaber;* I had seen several more specimens of it perched on the trees right by Quiriguá. This species had single, tiny spines some 2 mm. long and short aerial roots on the apical portions of the trailing or pendulous stems, which were up to 12 feet long.

That evening, spent in the railway station, reached its climax when one of the natives suddenly lifted his long machete and with one stroke sliced through a four-foot *barba amarilla* (Lancehead). How this dreaded, venomous snake, with fangs nearly three-quarters of an inch long, had been able to approach within six feet of me in the crowded, brightly lit station still remains a mystery.

It was not until several days later, after the cuttings had reached the University of California at Berkeley, that I came across Britton and Rose's "The Cactaceae", which contained a detailed description and picture of *Wilmattea minutiflora,* proving that I had indeed found my quarry. On the 14th of April I was back in Quiriguá, and when I strolled through its jungles, in a temperature of 105°F. and amidst irritating clouds of mosquitoes, I found flowering plants of the orchid *Schomburgkia tibicinis* and *Wilmattea minutiflora.* The latter's oval-shaped, purplish red flowers appeared at the ends of mature branches. The 4 to 5 cm. long corolla terminated the pineapple-like receptacle and remained almost closed in the daytime, thereby hiding its white interior almost completely. There was now no doubt as to the identity of my plant and it was therefore clear, after combining the known facts and my observations, that the south-western limit of distribution of *Wilmattea* in this part of Guatemala coincides with that of the typical jungle vegetation, which means that the species extends into the last strip of jungle beyond Iguana, that of the Río Managua, a tributary of Río Montagua.

Accordingly, high humidity and a high temperature are of prime importance for the vitality of this species. If we therefore search for further localities of this genus we must devote our explorations to those districts of Central America's Atlantic coast which are situated not far above sea-level and which are subject to a high degree of humidity. Going by this, we can assume that *Wilmattea* not only follows the Caribbean jungles south to La Ceiba in Honduras, but also spreads further south into the primeval Mosquitia jungles of the disputed Nicaraguan border. At any rate there are several of its Quiriguá epiphytic companions native to north-eastern Olancho (Honduras), such as *Schomburgkia tibicinis, Catasetum, Aechmea bracteata* and other bromeliads. On the other hand, the species undoubtedly does not extend into Costa Rica, where I could not have missed it during my rather extensive journeys in its Atlantic zone.

A look on the map reveals that the Motagua valley is completely separated from the Lago Izabál by a mountain range, Montaña de Mico, although the Río Motagua may have had access to that giant lake in earlier ages. If *Wilmattea,* according to Peters' statement, has crossed this mountain belt and reached the jungles of the lake-shore, then we should encounter it not only along the entire lower third of the Río Polochíc, which flows into the lake, but also along the out-flowing Río Dulce, to the Atlantic, from here northwards along the Caribbean coast toward the Yucatan peninsula in British Honduras and, possibly, even into Quintana Roo in Mexico. Its presence in the almost completely unexplored north-central department of Petén appears most unlikely, however, for Lake Izabál is quite isolated from Petén by the Sierra de Santa Cruz, a high mountain range in the north.

The Atlantic rain-forests of Central America and Panama remain almost unexplored botanically and still contain many unsolved mysteries. We are thus limited to speculation, and only by slowly assembling fragments of available data can we hope to gradually fill the wide gap of ignorance. Increased knowledge of plant geography and ecology are no

doubt the major steps in solving this jig-saw puzzle, whose complexity can only be appreciated by those who have seen one of nature's cradles, the Atlantic rain-forest. And *Wilmattea minutiflora* is but *one* creation of this infernal paradise.

REVISED BY-LAWS OF THE CACTUS AND SUCCULENT SOCIETY OF AMERICA, INC.

January 1, 1961

ARTICLE 1, MEMBERSHIP

1. There shall be five classes of membership: Active, Associate, Sustaining, Fellowship, and Life.

2. Any person, organization or institution, interested in cacti and/or other succulents, shall be eligible for active membership, provided he has, or they have, duly applied for membership and paid the subscription to the Cactus and Succulent Journal.

3. An associate member is a member of the immediate family of an active member who, on application for associate membership and payment of the annual dues of one dollar in advance, on acceptance by the Board, acquires all the rights and privileges of active membership, but does not receive the Journal.

4. A sustaining member is an active member who contributes annually to the Society Treasurer a sum in addition to the regular membership fee, but not less than $1.00 additional. This additional sum to be deposited in the General Fund of the Society to be used for educational work. The sustaining members name shall appear in the next issue of the Cactus Journal following his contribution.

5. A Fellow of the Society is a member or non-member who has contributed by writing, lecturing, exploring or in some other outstanding manner, to the advancement of knowledge of succulent plants. His name must be proposed to and accepted by the Board.

5A. Fellowships are given for life, unless revoked by action of the Board, even though membership may lapse in the interim.

6. Any person may become a life member upon payment of $100.00 with the approval of the Board, and shall be thereafter exempt from payment of all further dues. Life members shall be entitled to all the rights and privileges of active members.

6A. Life membership may be conferred on anyone, for valuable aid or services rendered toward the advancement of the Society, by a majority vote at a regular meeting after recommendation by the Board.

7. All applications for membership or renewal shall be passed upon by the Board. The Board shall have the power to expel any member for adequate cause and and shall thereupon refund the unexpired portion of the membership dues.

ARTICLE II, OFFICERS

1. The Officers of the Society shall be as follows: President, Vice-President, Recording Secretary and a Treasurer, who shall hold office for a term of one calendar year, and a Board of Directors consisting of those officers, the Junior Past President, the President Emeritus, when such office is occupied, and twelve other directors. Appointive officers (Corresponding Secretary, Affiliate Secretary, Editor and Librarian) shall be ex-officio members of the Board.

1A. The Directors shall be elected for a term of four years, only three of the Directors to be elected each year.

2. President: The President shall preside at all meetings of the Board and the Society. He shall be an ex-officio member of all committees.

3. Vice-President: The Vice-President shall assist the President in the performance of his duties, and in the absence of the President he shall preside at the meeting of the Board and the Society. In the absence of both, a chairman shall be chosen.

4. Recording Secretary: The Recording Secretary shall attend all meetings of the Board and the Society and keep correct minutes of all proceedings; give notice of all meetings; have custody of the records and archives of the Society. He shall attest signatures of the President to certificates, letters, testimonials, and such other official documents and undertakings of the Society in writing as may be legally executed by the President. He shall perform such duties as may be assigned to him by the Board or by members of the Society assembled at any meeting. He shall file in appropriately lettered alphabetical indices all letters and communications received by him pertaining to matters of the Society. He shall be authorized by the Board to expend such amounts as shall be necessary for the proper performance of his duties and shall present vouchers covering such expenditures to the Treasurer. At the expiration of his term of office he shall surrender and deliver over to his successor all books, records, papers, vouchers, funds, letters, memoranda and other property of the Society or for which the Society may be responsible, including the Seal. In case of his absence from any meeting, a Recording Secretary Pro-tem, shall be selected by the President.

5: Treasurer: The Treasurer shall have the care and custody of all monies, property and records of the Society entrusted to him. He shall keep a correct record, upon which he shall enter all receipts and disbursements in a book provided for that purpose and suitably ruled and subdivided to show the date and from whom the funds were received, the number of the checks or drafts, the name of the payee and the purpose for which disbursement is made. He shall disburse and pay out of the funds of the Society by separate check, for each obligation, only upon orders signed by the Recording Secretary and countersigned by the President. He shall make and render a complete, detailed report of his receipts and disbursements, to a date and time not more than five days previous thereto at the last regular meeting of the year of the Board, together with a brief report of the condition of the treasury. At the expiration of his term of office he shall turn over and deliver to his successor all funds, checks, and drafts, books, records, papers, and property of the Society that may be in his possession.

ARTICLE III, APPOINTIVE OFFICERS

1. The Board shall, at its first meeting, appoint a Corresponding Secretary when needed, an Affiliate Secretary, and Editor and a Librarian.

2. The term of any appointive office shall be for one year or portion thereof and may be terminated at the discretion of the Board prior to the end of the Calendar year for which they were appointed, except the Editor whose term of office shall run concurrently with his contract.

3. Corresponding Secretary: The Corresponding Secretary, whenever the Board feels one is needed, shall handle the Correspondence, other than Affiliate, and do whatever other duties the Board requires.

4. Affiliate Secretary: The Affiliate Secretary shall handle correspondence with affiliated societies, foster the formation of affiliated societies and operate a serv-

ice bureau for their benefit. He shall keep the Board informed of the activities of all affiliated societies. The Secretary of any affiliated society shall be privileged to transmit to the Affiliate Secretary any matter which the affiliated Society desires to have brought before the Board and it shall then be the duty of the Affiliate Secretary to bring such matters before the Board at its next meeting and secure definite action thereon.

5. Editor: The Editor shall have charge of the Society's official Journal and such other publications as the Board deems fit to issue. At its discretion, the Board may enter into a contract with the Editor for the business management of its publications. In such case the term of office of the Editor shall run concurrently with such contract.

6. Librarian: The Librarian shall have full charge of all books, papers, magazines and other publications and properties entrusted to his care. He shall present a report annually in triplicate to the Executive Board and one copy of this report shall be retained by the President, one copy by the Secretary and other by the Librarian. He shall make a verbal report whenever called upon to do so by the President at any meeting of the Executive Board.

The Librarian shall be held responsible for the careful retention and care of the Library during his term or terms as Librarian and shall relinquish the Library properties to his duly appointed successor only when officially notified to do so by the Executive Board.

The Librarian shall maintain a card file and bound accession book, listing all books, magazines, publications and other properties entrusted to him and this file shall show the file number, the title, the author and the source from which the book was obtained, for each individual book or publication. If the book was a donation or gift the file card shall contain the name of the donor and the date of the donation.

7. Honorary Officers: The Board may, at its discretion name honorary officers in recognition of any outstanding contribution to the advancement of the Society or its aims and purpose.

ARTICLE IV, BOARD OF DIRECTORS

1. Meetings: The first meeting of the year shall be held during the month of January at a time and place designated by the President.

A meeting shall be held on or after May fifteenth and not later than June the thirteenth at which a nominating committee of five members shall be elected by ballot. It shall then also designate the time and place for the annual meeting of the Society.

A meeting shall be held in December, at which time the ballots duly received shall be counted.

Additional meetings shall be held on the call of the President or upon written demand, signed by not less than five Directors, transmitted to the Recording Secretary.

2. Notices: The Recording Secretary shall notify each Director in writing of the time and place of each meeting, which notice shall be mailed at least five days prior to the time designated.

3. Quorum: The presence of five Directors shall constitute a quorum at any meeting.

4. Duties: The Board shall have control of all the business of the Society. It shall have authority to appoint and remove all appointive officers, agents and committees not chosen by the Society. It shall cause to be issued such publications as it deems advisable and to define the policies of the Society, adopting any measures not inconsistent with the Charter and By-Laws. It shall name such committees as it deems advisable, either from its own membership or from other members of the society. It shall select places for holding exhibitions and make arrangements therefor. It shall prescribe such rules and methods in respect to conducting exhibitions as it deems best. It shall have direction and control of lectures and other entertainments and undertakings under the auspices or official recognition of the Society. It shall have the Society's accounts audited annually by a committee of three members chosen by the Society at its annual meeting. It shall fill vacancies arising through the death or resignation of any elective or appointive officer.

ARTICLE V, AMENDMENTS

1. The By-Laws of the Society may be amended by a three quarters vote at any meeting of the Board provided each Director shall have been sent copies of all proposed amendments not less than ten days prior to such meetings. All amendments, after enactment, shall be published in the following issue of the official Journal of the Society.

ARTICLE VI, MEMBERSHIP MEETINGS

1. Annual Meeting: The annual meeting of the Society shall be held not later than September the thirteenth, at which time the report of the nominating committee will be received and read. Additional nominations shall be received from the floor.

2. Additional Meetings: Other meetings shall be held at such times and places as are designated by the Board.

3. Quorum: A quorum at any membership meeting shall consist of fifteen members. Only members in good standing may transact business.

4. Notice: Due notice shall consist of publication in the official Journal of the Society or notification by mail, which notice shall be mailed at least five days prior to the time designated.

ARTICLE VII, NOMINATIONS

1. Nominations: The nomination committee shall return one or more nominations for each elective office. Nominations for each elective office may be made from the floor at the annual meeting, provided that each nominee shall accept in person or shall have previously furnished his nominator written acceptance of the proposed nomination.

Nominations for each elective office may be made upon the written petition of any five members accompanied by written acceptances of the proposed nominations, provided that such petitions shall be transmitted to the Recording Secretary before the time of the annual meeting. An affiliated society may, at a regular meeting of such society, nominate one candidate for each of one or more elective offices and such nominations, accompanied by written acceptances by the proposed nominees, must be transmitted to the Recording Secretary through its secretary prior to the time of the annual meeting.

2. Ballot: All nominations shall be placed in alphabetic order on the ballot by the Recording Secretary, together with one blank space for write-in for each office.

3. Eligibility: A candidate may not accept nomination for more than one office. Only members in good standing in the Cactus and Succulent Society of America, Inc., may be nominated.

ARTICLE VIII, ELECTIONS

1. It shall be the duty of the Recording Secretary to prepare, have printed and mail to each active member, not later than October thirty-first, a copy of the official ballot provided by the Society.

2. All ballots received by the Recording Secretary no later than midnight of December first, shall be counted by the Board at its meeting as provided for in Article IV, Section 1. The candidate receiving the largest number of votes for each respective office shall be declared elected. After being counted, the ballots shall remain on file for a period of thirty days, and shall be open for inspection to any member of the Society.

ARTICLE IX, AFFILIATED SOCIETIES

1. Any Cactus and Succulent Club or Society or other horticultural group whose objects correspond with the objects of the Cactus and Succulent Society of America, Inc., may affiliate with the Society upon approval of its application for affiliation and its Constitution and/or By-Laws by three of the following: The President, the Vice-President, the Recording Secretary and/or the Affiliate Secretary, after they have thoroughly perused them.

2. An Affiliated Society shall be completely independent of the Cactus and Succulent Society of America, Inc., as regards the conduct of its own affairs and has not and shall not, in the future, be liable for any indebtedness incurred by the Cactus and Succulent Society of America, Inc., for adequate cause.

3. The affiliation may be terminated by resignation or by action of the Board of Directors of the Cactus and Succulent Society of America, Inc., for adequate cause.

4. A set of Affiliate Rules shall be adopted by the Board of Directors of the Cactus and Succulent Society of America, Inc., and maintained by the Affiliate Secretary. Any changes therein shall be made only with the approval of the Board of Directors of the Society. These rules shall be kept as an appendix of the By-Laws of the Society.

ARTICLE X, CONVENTIONS

1. Conventions may be held when authorized by the Board of Directors of the Cactus and Succulent Society of America, Inc., in accordance with a set of rules covering the operations of Conventions, adopted by the Board of Directors and maintained by the Convention Committee. Any changes therein shall be made only with the approval of the Board of Directors of the Society. These rules shall be kept as an appendix of the By-Laws of the Society.

CACTUS AND SUCCULENT SOCIETY OF AMERICA, INC.

1961 Executive Board

Junior Past President
Harry Johnson, Sr.
Box 458, Paramount

President
Edward S. (Ted) Taylor
3036 Nebraska, South Gate

Vice-President
Nicholas Bokarica
1496 Cheviotdale Dr., Pasadena

Recording Secretary
Wm. B. Bentley
18317 Farjardo St., La Puente

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Editor
Scott E. Haselton
132 W. Union St., Pasadena

Librarian
Orva Bokarica
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Affiliate Secretary
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8627 Denver, L.A.44

Corresponding Secretary
Ethel Rush
820 W. 115 St., L.A. 44

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San Diego Museum of Nat'l Hist.
Balboa Park, San Diego

Dr. Reid Moran
San Diego Museum of Nat'l Hist.
Balboa Park, San Diego

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Sherman Ernest Beahm
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612 N. Electric, Alhambra

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Dr. H. C. Lawson
595 Meadow Grove Pl., Pasadena 3

Don B. Skinner
8627 Denver Ave., L.A. 44

Dr. Lymon Benson
1430 Via Zurita, Claremont

George Glade
7600 Verdugo Crestline Dr., Tujunga

Hans Dyrhsen
1024 Indiana, South Pasadena

BOOK ON SEDUMS

"Sedum of the Trans-Mexican Volcanic Belt" by Robert T. Clausen. 300 pages and 83 illustrations, $7.75 from Abbey Garden Press. A toxonomic study of plant populations in the field—their extent, ecology and morphological variation—and the experimental culture of parts of the same plant to determine the degree of their modification by environment and the significance of differences among populations.

Editor of the Journal:

You asked for our experiences collecting cacti. For many years I have been associated with cacti in one way or another and have had an abundance of experiences.

The first one occurred almost fifty years ago when I was just starting to a little one room school on the edge of the Mojave Desert. I rolled down a hill and landed in a beautiful specimen of *Opuntia vaseyi*.

My next experience was in the Ventura foothills, when as a student of the native flora, I attempted to eat the fruit of *Opuntia litoralis* without first removing the glochids.

With these two experiences as a beginning, I continued to have many and varied types of experiences with cacti, as my father was a rabid cactus fan for many years and consequently our yard was always full of many interesting cacti and people.

The next experience of any great importance came when my sister came dashing in and said, "Gee, look at the handsome man out in Pop's cactus garden." I casually strolled out on some pretense, and met my future husband.

From then I was lost to the idol "cactus". I spent years taking spines out of four little boys, entertaining cactus fans, cultivating and collecting all kinds of spiny cacti, taking all my vacations in Mexico or on the desert, and half of most nights listening to an old typewriter bang away on the subject of California cactus. In fact for almost a half a century all I've had is experience with cacti, and today the climax reached; I got so badly stuck to an *Opuntia echinocarpa* that it took the neighbors an hour with a pair of pliers to get me free, bleeding and hurt. I give up, from now on I am going to have all my experiences with the milder succulents.

MARY BAXTER
An x-cactus fan

EDITOR'S NOTE: Next time you see Mary, ask her to say Sclerocactus polyancistrus. (Mary lisps).

CULTIVATED AND NATIVE AGAVES IN THE SOUTHWESTERN UNITED STATES

AUGUST J. BREITUNG
1416 S. Glendale Ave., Glendale, California

Fig. 6
Agave ellemeetiana. Left: rosette approx. ⅕ natural size; right: leaf detail approx. ½ natural size. Grown and photographed by J. Marnier-Lapostolle.

PART 12

Agave ellemeetiana Jacobi, Hamb. Gart. Zeit. 21: 457, 1864.

A. pruinosa Lemaire in Jacobi, Hamb. Gart. Zeit. 21, 449, 186A.

Distribution: Mexico; type cultivated in Europe considered to have come from vicinity of Jalapa, Veracruz.

Rosette 6 to 8 dm. in diameter, nearly stemless; leaves oblanceolate, 4.5 to 6.5 dm. long, 10 to 15 cm. wide, slightly narrowed above the base, apex abruptly ending in a stiff point, margin entire or sometimes microscopically denticulate; flower stalk 4.5 m. high, scape .5 m. long, covered with numerous lance-linear, broad-based bracts; flowers in a dense erect spike, perianth segments pale greenish-yellow, 15 to 16 mm. long; capsules 13 to 15 mm. long and 10 mm. wide. Living plants contributed by J. Marnier-Lapostolle.

Agave guiengola Gentry, Brittonia 12(2): 98-100, 1960.

Mexico: 25 to 27 km NW. of Tehuantepec, Oaxaca on Guiengola limestone.

Rosette single or with few offsets, .7 to 1.3 m. in diam.; leaves 25 to 30, glaucous 30 to 50 cm. long, 15 to 25 cm. wide, ovate-lanceolate, short acuminate, openly ascending, nearly flat above but briefly and narrowly channeled at tip; margin variously serrate with flattened, blunt, single or paired, dark brown teeth 3 to 5 mm. apart, 2 to 3 mm. long; spine dark brown, 3 to 4 mm. wide, 1.5 to 2 cm. long, more or less decurrent; inflorescence spicate, erect, bracts recurved, long attenuate 1 to 2 cm. long, 3 mm. wide at deltoid base, flowers pale yellowish-white 33 to 35 mm. long, including the ovary, capsules 22 to 24 mm. long.

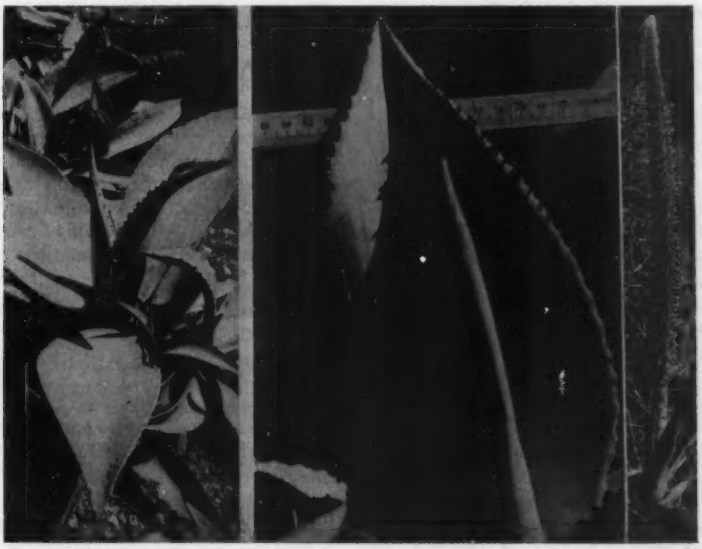

Fig. 7

Agave guiengola. Left: rosette approx. 1/6 natural size; center: close-up of leaf showing armature detail, approx. 1/3 natural size, grown and photographed by J. Marnier-Lapostolle; Right: inflorescence at type locality, photograph by Tom MacDougall, much reduced. Tom MacDougall, personal correspondence dated June 26, 1960, states: "I sent collections (of *A. guiengola*) to Mr. Marnier-Lapostolle during 1954 from vicinity of Tehuanetepec."

Fig. 8

Agave eduardi. Grown by Howard S. Gentry, Murrieta, California. Introduced from Barranca de Calimilla, near Guadalajara, Jalisco. Left: rosette approx. 1/10 natural size, right: leaf tip showing terminal spine, approx. natural size.

Agave eduardi Trelease in Standley, Trees & Shrubs of Mexico, Cont. U. S. Nat. Herb. 23(1) 134, 1920.

Distribution: Mexico; Durango, type from San Ramón. Specimen grown by H. S. Gentry, Murrieta, California, introduced from Barranca de Colimilla, near Guadalajara, Jalisco.

Rosette single, 1 m. high, approximately 15 leaved, leaves glaucous, 8 to 10 dm. long, long-attenuate erect and outcurved, concave above, convex beneath, terminated by a stiff, slender brown spine 10 mm. long and 1 mm. wide, margin with very narrow, more or less, interrupted brown edge which when present is microscopically denticulate; flowers not seen, here transcribed from Trelease, l.c.: "scape covered by long narrow bracts; pedicels connate into a peduncle some 15 mm. long; flowers yellow, 40 mm. long; ovary flask-shaped, 20 mm. long, the tube narrow, about one third as long as the segments, the filaments inserted in its throat; capsules scarcely glaucous, 8 mm. broad, 20 mm. long." Perhaps not distinct from *A. vilmoriana.*

EUPHORBIA OBESA

Dear Mr. Haselton:

Four years ago, in the November-December 1956 issue of the Journal, you published a photograph of a Euphorbia obesa of mine which had grown quite elongated and had reached a height of 20 inches. Judging from the great number of letters which I received subsequently, it seems that this unusually tall Euphorbia created considerable interest. Every so often someone still writes me, asking how the plant is doing.

From September 1956, date on which I wrote you, until recently the plant continued to grow both in height and in the width of its "head". It gained 5¼ inches in height, which represents a rate of approximately 1⅓ inch per year. The gain in width was quite substantial, but having not taken prior measurements, I have difficulty in estimating it. During these last four years the plant was in excellent health, flowering regularly and abundantly. However, the weight of its "head" seemed to get too heavy and the plant began to nod, bending its head further and further down. I found it necessary to give it support.

In May-June 1960 the plant flowered as heavily as usual. In early September it began to start flowering again, but the flowers never reached full development and dried up. In the last week of September the plant began to lean more heavily in its cradle. On October 1, I discovered that the very top was soft, and removing the plant from its pot I found the roots were nearly all gone. The plant, otherwise, looked all right: its entire body, except for its very top, was firm as a rock. It was evident, however, that it was dead.

Careful examination of the pot and the soil showed no sign of bugs or disease. The soil was in good condition, sweet, loose, only moderately damp. Up to the very last the plant had had exactly the same care as it had always had. It would thus appear that it had died of old age.

This plant was bought in 1932 which was 28 years ago. It was then about 1½ inches high, maybe 2 inches. Perhaps some of our growers could estimate fairly accurately the age of a plant of such size. Personally, I would guess the age at 5 or 6 years, but I might be wrong. If I am right, this would have made by plant 33 to 35 years old when it died. I would be curious to learn if any one has any longevity record of the Euphorbias obesas.

Last measurements of the plant were as follows: Height (measured along outside of curve), 25¼ inches; Circumference at base, 13½ inches, at narrowest of waist, 8¾ inches, and maximum of head, 14½ inches. Weight (unpotted, dead and no root), 8¼ pounds.

The plant was a male.

E. R. LEROY, San Francisco

Note: Your Editor has a plant 18 inches tall and three inches in diameter. It has two tiny offsets about half way up. This plant is a seedling from the R. W. Kelly collection and must be over 15 years old. It is in a 4 inch pot and has never been repotted. Mine is a male plant and will it too, die in another five years—perhaps from lonliness?—S.E.H.

PRESIDENT'S MESSAGE

I wish to thank the many people who returned me to the Presidency of this Society. There were more votes cast in this election than ever before. Many interesting comments were inclosed with the ballots, with the majority commending the activities of the Society. The very few criticisms were regarding the election of Officers from the Los Angeles Area only. It would be nice if members of the Board could be from outside this area, but I doubt very much if they could afford to attend the required Board meetings; which, under the incorporate laws of the State, must be held in the Los Angeles Area only. If you know anyone from othr areas who would promise to attend the majority of Board meetings of the Society, please let us know, we would be very happy to have more good workers made available.

Now that its subscription time again, I hope the members will remember about Associate, Sustaining, and Life Memberships. Check the copy of the revised By-Laws, elsewhere in the Journal for costs. These fees should be sent directly to the Secretary, Mr. William Bently, 18317 Farjardo, La Puente, Calif.

Elsewhere in the Journal you will find details on the forthcoming Convention in Mexico. Hotel commitments made a change in the dates mandatory, so that the Convention will start on Wednesday, July 12th, 1961, and end on Monday, July 17th with a giant Fiesta for the evening. Tentative plans indicate a fine time for all with Field Trips into the heart of the Cactus country. Information Sheets and Registra-Forms will be sent to every member and Affiliate this month. I hope you have made that date with the Doctor for the necessary Smallpox vaccination; get it out of the way so we won't have sore arms during the trip.

See you in Mexico,

EDWARD S. TAYLOR, *President*

ARTICLES AND PHOTOS WANTED

We would like a series of articles with photos of native plants of Texas, New Mexico, Arizona, Colorado, etc. Our membership in the Southwest is growing rapidly and we should have many articles and photos from this section of the country which is so rich in cacti.

DESERT FLOWERS UNDER GLASS

The story of my experiences and delight in growing and flowering Cacti and Succulents in a small glasshouse in Christchurch, New Zealand

By MARJORIE E. SHIELDS

Chapter 19
GYMNOCALYCIUMS

Back now to where we left K. aliciae (pubescens) holding her floral parasol over the gaily coloured Lobivias. Then on to the next group where stately matrons with their many chins proclaim themselves the Gymnocalyciums from South America. Their peculiar name means naked bud and without a doubt I think the buds on this group of plants are more beautiful than any others. Neither a hair nor a spine mars their perfect form and each little scale wrapped round a bud is clearly defined with either a white or pink translucent edging. See also how the plants differ in appearance. Some are dull with a skin texture like rubber or suede, others again are polished jade. Some too, have the tiniest spines, some bristles, while others are very fearsome looking; some wear their spines flat against their bodies, others stand away in graceful curves. Lovely Gymnocalyciums even without flowers! But when the blossoms do appear and sit so comfortably on top of the flat cushions provided for them, ah! then . . . ! But let the flowers speak for themselves. The majority of these blossoms are cream and have the thick texture of a camellia or a gardenia. Some flower when very small, G. bruchii for instance had its first blossoms when but half the size of a walnut and was completely hidden under its floral array of little pinkish white flowers, the back petals with bronze green mid ribs. These flowers as well as the plant may be the smallest in the group. But see how the plant is beginning to cluster, even the babies have their buds. Aren't they perfect? The skin texture is dull bluish green covered with tiny clusters of very fine white hair-like bristles. They can't be spines for there is not a sharp point anywhere. This plant is also known as G. lafaldense and comes from Argentina.

One of the largest plants here is G. multiflorum with a highly polished green body. From the large oval areoles 10 thick awl shaped radial spines arise to lie horizontally against the body, with the middle lower one, long and straight, standing almost at right angles to the others. All are cream shading to deep reddish brown at the base. Multiflorum meaning "many flowered" lives up to its name. Now that the buds have opened, the green from them can still be seen in the outer pink petals, the inner ones being white. When the blossoms open wide the flowers are white but when half closed are a glorious pink. Exquisite, is I think, the word to describe these lovely flowers. G. multiflorum is found in many places from Brazil to Uraguay, Paraguay and Argentina.

Also from Argentina comes G. bodenbenderianum. A purplish, rubbery looking plant, with a flat disc-like body, suffused with copper down each row of small closely spaced white woolly areoles, while three, sometimes four tiny down curving spines, droop over the many chins. The back petals of the flower are greenish, the inner ones pure white, wide, bluntly pointed and recurved with a thick camellia-like texture. From the deep red throat rises a thick bunch of stamens, red at the base, shading to yellow at the top and curling over the yellow stigma lobes.

G. platense is a somewhat similar plant, for as its name tells us, it too, is broad and flat, but the skin texture is more like suede than rubber and has quite a flush of pink. The areoles are placed further apart, each with five tiny spines, the longest in the centre at the base. Both on this plant and on G. bodenbenderianum the spine clusters look like small insects in a long line marching up the ribs. The green flower tube is pink flushed, so too are the little pink edged scales, while there is a definite pink tinge to the white petals. The throat is very red, much more so than in the previous one, while the petals though narrower and sharply pointed are also recurved and have the same camellia-like texture. But look! Here is a different one. What a glorious colour! This is G. venturianum, and the red which so many of the white ones have in the throat has spread over the whole flower! A lovely ruby red, deeper in the throat and slightly paler as it reaches the petal tips. The yellow anthers suspended on the tips of red stamens fill the throat in graduated lengths and surround the deep red style which breaks into pink stigma lobes. This most lovely flower is similar to G. platense in shape. The flat disc-like plant could have been made from green suede, and the five very brittle white spines, ruby red at the base, come from the base of the areole only, the longest being little more than half an inch.

G. gibbosum the "humped" Gymno. from

Argentina and Patagona is a large knobby looking green suede plant with spines much larger than others we have seen so far. They stand out straight in clusters of ten, with three centrals, from the wide apart areoles. The flowers have long narrow, wavy petals, each with a twisted tip and like the spines they too stand straight, having a slightly longer tube than others. Nor are they thick in texture, but dainty—fashioned from silk, whereas the others are in heavy satin. The lovely flowers are pure white, with white stamens and yellowish stigma lobes. G. gibbosum ferox is even more spiny than Gibbosum itself, the spines being longer and finer. And do you notice they are red at the base? This is a very young plant and it will be interesting to watch it develop. Then there is G. denudatum—"denuded and naked", with a light green suede body. This plant being so green looks quite conspicuous amongst the others. It has wide low ribs and wide apart areoles and spines rather like washed roots sprawling flat against the body, one at the base of the areole and two on either side. They also resemble hunterman spiders, the small areole, the body, the spines, the long sprawling legs. Daddy-long-legs spiders we used to call them as children. The white flower with wide pointed petals has a crimson throat, the stamens too, are crimson, shading to pink, while the anthers and stigma lobes are cream.

Rather similar is G. deesiana but with the spines much longer and with none in the crown at all, while at some of the lower areoles a long straight central has developed. Like G. denudatum there are five spines, the upper pair almost horizontal but the second pair like long drooping moustaches! The flower is pale cream with wide, blunt petals, a faint brush mark of bronze on the tips of the back ones lends a little colour. The throat is slightly greenish, stamens deep cream and the stigma lobes pale cream almost white.

Here is one with a shining bright green body. G. prolifera from Argentina with very fine bristle-like spines, so intermingled they form a fine net work over the body. What a lovely flower it has with its recurved back petals tinged with bronzy green, the inner white ones tipped with green and flushed red in the throat. It also has a camellia-like texture. This flower is larger than others of its type; it looks so stately as it stands straight and beautiful on top of the plant, like a lovely Grecian urn on a green and white mosaiac cushion. G. schickendantzii from N.W. Argentina is a grand plant too with colourful spines, silver grey with a red vein running down the centre of each. The areoles are large and oval, and these long spines, four a side and one at the base are recurved and cast shadows on the plant underneath. The flower is not as large as some but stands well away from the plant on a longer than usual tube. The very compact blossom, just 1¼ inches across has broadish petals coming to a blunt point, and there are so many petals the flower is almost double. Pale pink in colour with a deeper pink mid rib and a touch of grey green on the tips of the back petals highlight the colour, while cream stamens rise from the cream throat. A colourful flower on a colourful plant.

Then there is G. saglione with the quaintest flowers. As the plant is large I expected flowers in proportion. But what has it produced? A small compact flower on a very short wide tube; therefore the throat is also wide, with cream stigma lobes well down in the centre. A ring of stamens at the base of the petals looks like a little ruffle surrounded by a ring of bronzy pink, short, wide petals, with a crepe-like texture. If one likes large flowers then these are not outstandingly beautiful, but they are very sweet, with an old world charm which suits the plant. This plant with its bright green suede body—a clean, cool, refreshing green—does not need exotic blooms to enhance its beauty; its main attraction being the large clusters of spines coming from the big woolly areoles, both in mushroom colouring, but the spine tips, to nearly half way down are brown. These spine clusters resemble more than anything else huge spiders, their many thick, curved legs, held high so as not to contaminate the beautiful body. They make a complete lath house to shade the plant underneath and the circle of little frilly flowers arranged amongst them look like posies, they are just perfect for this beautiful plant.

Now look at the little gems along the front, G. mihanovichii, its variety G. friederichiae and G. damsii all from Argentina and quite unlike any of the others. G. mihanovichii has a small, angled, maroon coloured body, G. friederichiae is in golden brown and G. damsii in green and copper. The first two are banded in cream, copper and green both around the body and down, giving a plaid effect. G. mihanovichii has striking emerald green buds tipped with pink, opening into exquisite grass green blossoms. As the flowers fade the seed pods turn bright purplish magenta! And as buds, flowers and seed pods are very often on the plant at the same time, the effect is startling! G. friederichiae has been here 18 months. It arrived from overseas in the early spring after taking over three months instead of three weeks for the journey and it looked very sick. However I planted it and hoped for the best. All who saw it laughed and advised me to throw it away but as I had not the heart to do so, it just sat in its pot looking very small, very brown, and very miserable, until I had grave doubts about it myself. There was no sign of any new growth at all, and then in mid sum-

mer a tiny bud appeared on the top! Then another and another! The plant began to fill out and look very much alive. When the first bud opened, and was a beautiful deep pink I was thrilled! Now here it is again in flower. With buds in reseda green, the back petals etched with

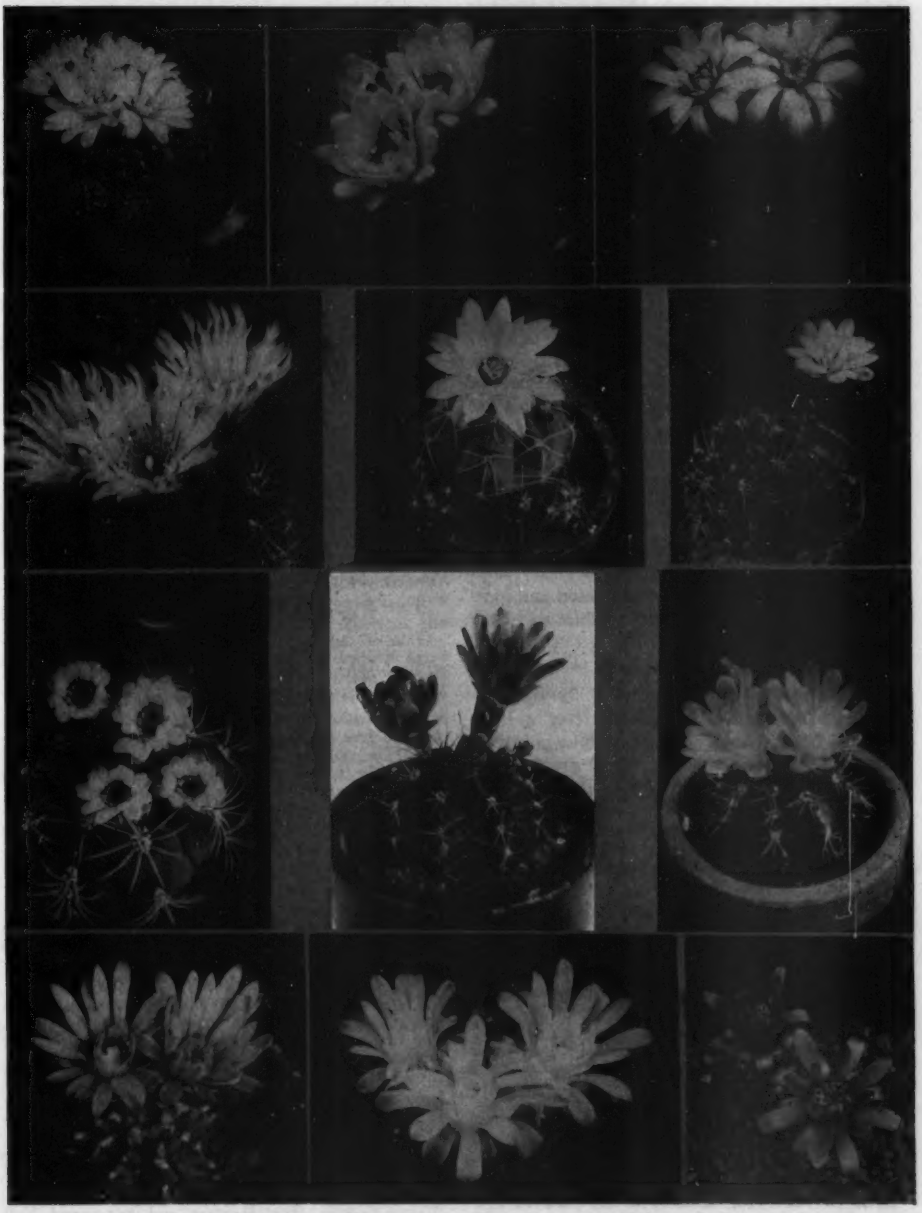

Fig. 10. Left to right. Top row: Gymnocalycium bruchii, G. multiflorum, G. bodenbenderianum. Second row: G. gibbosum, G. denudatum, G. schickendantzii. Third row: G. saglionis, G. mihanovichii, same. Bottom row: G. mihanovichii var. friederichiae, G. damsii, G. venturianum.

bronze green, what a lovely contrast they make against the inner pink petals. I *said* it was a gem! G. damsii has green flowers—pale lime green, very translucent. The outer petals have a slightly deeper bronze green mid rib, the inner ones nearly white—a truly lovely blossom. It reminds one of pale green water, almost colourless.

G. hyptiacanthum with "spines reversed or bent back" and lying flat against the body, also has a spidery appearance. This plant is very easily handled. The lime yellow flowers are lovely and completely hide the little body underneath. The outer petals tipped bronzy green and almost transparent with the mid rib showing through, and light green stamens and brighter yellow anthers fill the green centre, add the final touch to this exquisite flower. G. joossenianum has yet to show how its spines will develop, the plant is very young, and at present they do not look very interesting, but the flowers are delightful. They are large with many long, narrow, pale pink petals, but rather shy of opening them wide to show the white stamens inside. The buds are a beautiful carmine pink. G. andreae has a neat little blossom with clear yellow petals tipped with bronze. The plant is quite immature with spines not yet properly developed. These last three plants are new to the collection and it will be a year or two before they will give of their best, and show how their spines will develop. But in the meantime they have flowered and have shown us what their blossoms are like and how they will add colour to this lovely group.

Gymnocalyciums are not difficult to grow, provided they have a moderately rich porous soil. They can tolerate full sun but prefer a little shade. Most of them do not mind how cold it is in the winter as long as they are kept dry. Mealies do not seem to bother them at all, they appear to be almost trouble free.

A NEW CACTUS FOR NEW MEXICO

Report of the New Mexico Cactus and Succulent Society

Stories of new cactus finds naturally filter through the membership of the Cactus and Succulent Society. For several years members of the New Mexico branch of the Society had heard of one and indeed had seen one specimen in Mr. Ed Nadolny's fine garden. This was a very small plant found by Mr. Fred Knowlton of Bayfield, Colorado, on the San Juan River drainage near the Colorado-New Mexico border. We understand that this delightful plant will be described fully in the March issue of the Journal under the name of *Pediocactus knowltonii* by Dr. Lyman Benson of Pomona College, Claremont, California. It was named in the November-December issue (page 193) for 1960.

In August of 1960, members of the New Mexico Society headed for northern New Mexico in search of Pediocactus knowltonii. Headquarters for the two day trip were chosen to be the Coloradoan Motel and Restaurant at Gem Village, near Bayfield, Colorado. Upon arrival from Albuquerque, we knew we had come to the right place because in addition to remarkable collections of rock and mineral specimens cactus plantings were in evidence. The next day, careful examination of a cactus bed revealed a specimen of *Pediocactus knowltonii* properly nestled nearly out of sight beside a rock. By this time we had located our quarry in the field and so naturally quickly found it in the garden.

Since the main objective of the trip was to try to locate the plant in New Mexico, we drove Southeast of Bayfield, off the highway, and over some fairly good back roads until we were forced to be on location by termination of passability for the bigger cars. Examination of the Geological Survey maps Prince Pierce and Maynard Blumer had brought with them showed that we were just South of Colorado and in New Mexico. Our first search of the area turned up amongst the sagebrush some specimens of *Opuntia whipplei*, variety of *Echinocereus triglochidialus* and *Coryphantha arizonica* as well as several pieces and bits of old Indian pottery. Since cloud cover had moved over us and the temperature accordingly dropped to a comfortable walking level, the menfolk energetically scattered toward their impressions of the best hunting locale. The ladies moved more slowly and sensibly, beginning their search as soon as they were just away from the cars. An occasional small *Coryphantha arizonica* was apparent along with now and then a sprouting *Opuntia*. The first tiny *Pediocactus knowltonii* was located by Doris Murphey, who had never seen the plant before. When she asked Reva Pierce what it was, Mrs. Pierce let out a whoop and recalled the menfolk from their distant fruitless wanderings back to the proper habitat. For awhile it seemed as though only the girls could locate the plants, but the men finally got down on their hands and knees and improved their luck. Maynard and Sue Blumer also located the plants independently when we missed connections.

This delightful little plant appears amongst rocks the same size as itself and also hidden under the protection of sagebrush plants, where rich fine soil collects. It apparently requires a fair amount of moisture because nearby drier spots were devoid of any sign of the plant. It appears first to the eye as a pattern of white speckles anywhere from one-quarter of an inch to, in a few cases, nearly an inch in diameter. Closer inspection shows green nipples under every speckle of white. The spines can be distinguished by the naked eye, but a magnifying glass is necessary to reveal details. Rarely does the plant protrude more than three-sixteenths of an inch above ground level. It is often multicephalic in which case the diameter of each head is usually less than one-half inch. The find did indeed repay us completely for our expedition!

Concern about possible flooding of the habitat by the upper reaches of the lake that will be formed behind Navajo dam had spurred us to make the trip this August. We are happy to report that this tiny cactus grows above the proposed reaches of the lake, and hence will probably survive for some time. We also report that we found the plant in New Mexico. The location is properly described as along the Los Pinos river at the Colorado-New Mexico boundary.

On our way home through Cortez, Colorado, and Shiprock, New Mexico, we were fortunate enough to find *Echinocactus whipplei* and *Coloradoa mesae verdae*. A successful trip indeed! The happy participants of the outing were Sue and Maynard Blumer and children, Reva and Prince Pierce, Mr. and Mrs. Walter Gilbert, Ann Sherman and her friend Nell Rotzel and Doris and Byron Murphey and daughter, Patty Jean.

BYRON F. MURPHEY

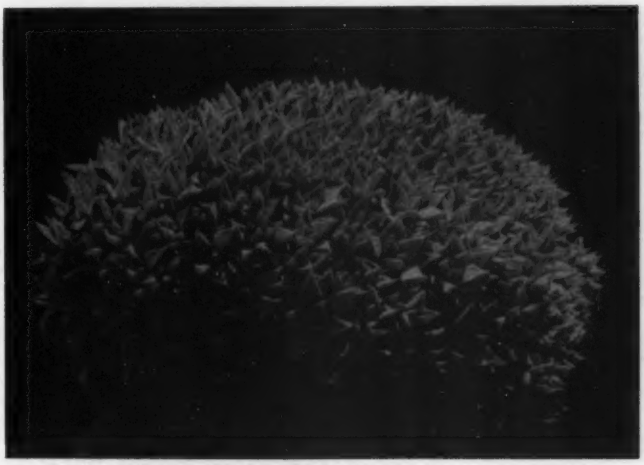

Fig. 9. *Haworthia dielsiana* grown by Beahm Gardens, 2686 Paloma, Pasadena, Cal. There were over 650 plants mounded up in this 8-inch pot. Mr. Beahm has a free price list of Haworthias.

CONVENTION IN MEXICO

This Society's Convention will be held in Mexico, July 12 through the 17th with headquarters at Hotel Del Prado in downtown Mexico City. Information sheets are now being mailed to everyone with all necessary data and reservation forms which are to be returned with full package-deal payment not later than April 15 to PO Box 2233D, Pasadena, California.

The first day will start with registration and then off for an exciting visit to the Botanical Garden at the University of Mexico where the noted botanist, Dr. Helia Bravo is the director. We'll spend this entire afternoon viewing this splendid display of hundreds of native specimen plants in a natural lava flow.

The first evening will be the official opening session with our president, Ted Taylor, giving the address of welcome and introductions of other officers and dignitaries. Followed by a regal ceremony of coronation of the King and Queen. Also a gala bill of professional entertainment.

An early start on the second day will take us on a tour of the spectacular valley of "Old Men" cactus. Returning for a late group dinner at Hotel Del Prado. The third day will include formal sessions, delegate meetings, and programs followed by a group dinner with romantic Mexican entertainment.

The fourth and fifth days we travel for a weekend in Tehuacan—one of the greatest cactus regions in all the world, staying at the famous desert restore Hotel Penafiel. The final day will schedule the last sessions and that evening the grand finale starting with a "cactus-juice" cocktail party followed by a banquet and Fiesta with outstanding entertainment and Adios!

Sr. Manuel T. Castella is the official representative for the Mexican Society and is in charge of all the activities planned. Ed. Gay is Transportation Committeeman and doing a fine job organizing all details through the affiliates.

Looking forward to seeing each and every one of you in Mexico. Hasta la vista!

PATRICIA MOORTEN
Executive Chairman

AFFILIATES' COLUMN

Murray Skinner, Affiliate Secretary

PREPARING FOR THE CONVENTION CHESTER AFFILIATE STYLE

The members of the Chester Cactus and Succulent Society are determined to attend this year's Convention in Mexico, so are now raising money for their expenses. Every member is working to help, making hand-made quilts (all kinds), aprons, novelties, edging for linens and handkerchiefs, and have sold some cacti and other succulents in novelty containers, also plant arrangements. The National Society should be proud of such affiliate.

TWO LARGE AFFILIATES

We would like to have the Sacramento and San Jose Societies tell us how they were able to oragnize such sizable groups in such a short time. This would be helpful for other organizations.

AFFILIATES: Time to renew. Send payment and *necessary papers to*

MURRAY SKINNER, Affiliate Secretary
8627 Denver Ave.
Los Angeles 44, Calif.

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—White, Dyer, and Sloane

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132 W. Union Street **Pasadena, California**

FROM SAN FRANCISCO

We were sorry to hear of the fire at Abbey Garden Press and so was the membership assembled for the meeting—they gasped when I started to read the notice of the fire. What, if anything, can our organization do to help out? I have been reading the back issues of the Journal starting with Vol. I, am now on Vol. XIX. What a beautiful job you have done over the years editing our Journal through good and bad times. I had looked through the back issues before but only in a casual way—stopping to read notes on plants I was interested in. Now I have the entire past history of the National Society and found familiar names and many interesting high-lights. I hope the newer members will be able to read the back issues also. Too many just take it for granted the regular appearance of the Journal without a thought as to what is behind it all. Best wishes for a quick recovery.

ANN GENASCI
Cactus & Succulent
Society of California Inc.

THANKS NEW YORK

Dear Scott:

We were all very sorry to hear about the fire at Abbey Garden Press—Ed Alexander showed us the picture you sent him—it certainly looks like an unholy mess! However it is good to see that far from being discouraged by this set-back you are hard at work planning bigger things for the next ten years. I am sure that you will have the best wishes and support of the entire national society to which I wish to add my own personal thanks for the many years of enjoyment that I have received from the Cactus Journal and other Abbey Garden publications. Keep up the good work!

JOSEPH EMMA, Pres.

THANKS TO ALL

These are only two of hundreds of letters of encouragement and help of all kinds that have been received. Surely, we cannot let you down now. One's friends have appeared from all parts of the world. As an example, Ed Alexander has resumed his Journal contributions with a new genus of cactus which will appear in the next Journal. Renewals have been pouring in and our goal is to exceed the 2000 mark this year; it can be done.

Regarding the back issues of the Journal; the loss was greater than anticipated but in a few months we will have a definite report. We are quite positive of making up nearly a hundred complete sets and then we will make available the remaining volumes and odd copies on a very attractive plan. We have all learned to obtain the books and magazines while they are available—next month may be too late. We are filling book orders and in the March-April Journal we will list some of the "fire-sale" items.

FIRE SALE

Local members are invited to the sale on February 12, noon, at 132 West Union, Pasadena. Most of the books are the standard items with burned cases but the contents are readable. There will be miscellaneous botanical books with title pages missing—many from the Book Mark stock. Journals will not be on sale at this time. We plan to show samples (and take orders) of *Euphorbia horrida* from the Frick Euphorbia Collection, 30 years old (see illustration). J. Reese Brown and David Grigsby will help with the plants and Sharon Gifford and Steve Haselton will conduct the book sale.

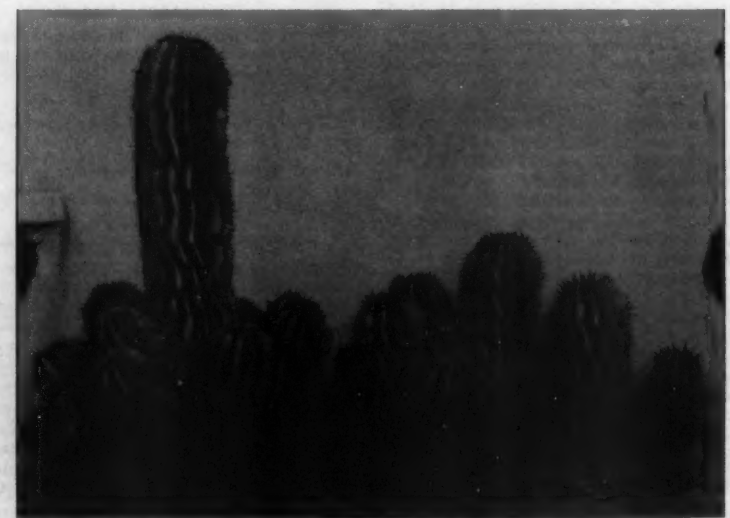

Fig. 11. *Euphorbia horrida*—1000 plants ranging from 6 in. to 25 in. from the Frick collection. All raised from one Holland import 35 years ago. In Vol. I of the Journal (July 1929) this was shown as a rare plant. See samples at the firesale.

SPINE CHATS

LADISLAUS CUTAK

In response to the many inquiries I received whether I was giving up my SPINE CHATS, this is my first opportunity to let you know that I will resume the column on a regular basis again. Pressure of garden work forced me to give up writing during the past year and although I will be very busy during the new year, *Spine Chats* will make their regular appearance. You may be wondering what I have been doing. Those of you who attended the 1959 convention in St. Louis saw the demolition of the main conservatories and progress on a new type of greenhouse to rise on their site. We had hoped the new Climatron would be completed in time for the hundred year anniversary of the Garden in the fall of 1959 but this, being a radical new structure, created a number of problems and construction was prolonged. The Climatron, as the name suggests, is a building wherein several climates are possible under one roof without any visible partitions. The planning and designing of the interior was carried out by the architect, our director, and myself. It was all up to me to supervise and execute the work. After the scaffolding was removed from the interior this past summer, my work trebled and often I found myself working thirteen hours daily and then some. The dedication date was advanced to October 1st, which meant about three months were allotted for me to bring the landscaping to completion.

In the latter part of May I made a trip to Florida with one of my workers and picked up a van-load of palms and other plant material for the new Climatron. Thirteen large palms, from 15 to 35 feet tall, were dug up at Fairchild Tropical Gardens, the Jennings Estate, and the U. S. Plant Introduction Garden in Miami and transported to St. Louis. Although palms of this area are regularly transplanted in Florida and California, I believe this is the first time such large plants were hauled more than a thousand miles to their ultimate destination without a single loss. We consider this a major feat. The palms form a dominant feature in the Climatron and are now established. The first planting was started on August 18th and by the time dedication came around an impressive waterfall was in operation, a large bog area planted, a mountain completed and other topographic features started. The Climatron is a geodesic dome of tubed aluminum covered with plexiglass. It rises 70 feet high and is 175 feet in diameter with two levels which permit full scope for the various topographic features. The dome is lit up at night with a battery of 112 one-thousand watt lamps which makes the Climatron scintillate like a many-faceted jewel. You may have already seen color pictures of this dome in LIFE and other publications. From time to time you will be seeing many more pictures of the Climatron, since this is the first building of its kind used exclusively for plants and already it has become a mecca for photographers. Work continues daily on added features and will continue for years as new ideas and plants are brought in. The Climatron is definitely a tropical house with rice paddies, an Amazonian forest, a jungle waterfall, a bit of Hawaii, an Asiatic mountain terrain and many other attractive features. All kinds of jungle plants can be seen, as well as cultivated crops as mango, papaya, pineapple, banana, cacao, fig and macadamia nut. Epiphytic cacti will be included and Rhipsalis, Epiphyllum, Zygocactus and many others should make a wonderful display. Desert cacti, of course, will be excluded. We are already making plans for the future and hope to erect a second climate house for the desert plants. This new desert house will feature a Mexican desert, South American desert, South African desert, Australian desert and a Sahara. Think of the wonderful plants that can be grown under one roof and in St. Louis! All eyes will be focused on St. Louis for years to come.

As you are reading these *Spine Chats*, picture me in the jungles of Colombia in South America where I am hoping to pick up some fascinating plant subjects for the Climatron. Bromels, aroids, palms, epiphytic cacti and other ornamental exotics will be collected. The Colombian flora is very extensive and colorful beyond description. My schedule calls for departure on December 12th and will keep me away for six weeks. First stop will be in Miami and then Curacao, one of the Dutch possessions in the Caribbean, where I expect to spend two days photographing and collecting cacti, if possible. There are nine species of cactus found on the island. Curacao is said to possess some of the most fascinating countryside in the world, looking a great deal like Arizona or New Mexico with its paucity of vegetation, sand and weird buttes and mesas. Thence to Barranquilla and Cucuta, where I will make my headquarters during my stay in Colombia. This eastern sector is made up of prairies and rain forests and is sparsely settled. During the Christmas holidays I plan to be in the jungles near the Ecuadorean border, which, I am told, is one of the richest floral regions in Colombia. Plans, of course, can be and will be changed on this trip, depending upon time schedules, conveniences, and factors affecting travel in a foreign region. Upon my return home I will give you a resume of my trip and what was accomplished.

At this time I want to express my gratitude for your patience and if in the future some of your letters go unanswered for a long time, please remember that garden work keeps me occupied every wakeful moment. I'm getting older, too, but still have the same enthusiasm as of yore, although I must slow up considerably in order to look forward to many years of travel that lie ahead. If any of you find yourself in St. Louis, don't fail to visit the Gardens and drop in for a chat. Come and see what we are doing here and what we contemplate to do in the future. Some of you have already seen the Climatron since it was opened to the public but do come back again. Many remarkable changes are taking place between visits. And let me remind you, please bring your cameras and lots of film.

* * *

ALBERT KREJCI

The many friends of Mr. Krejci regret his death on Jan. 2, 1960. Although commercial, he was a collector of rare succulents. He was an excellent propagator and we recall that while he was showing us around he would come across a 5-inch plant, grab it, make a dozen cuttings, and distribute them all over the place; yet he knew the location of every minute plant.

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CHANGE OF ADDRESSES

Address changes are a serious problem to your Editor. Please cooperate and send the change of address by the first of the month, otherwise we will have to make a change of 50c for return postage and remailing another copy.